Statistical Information Bulletin for Africa

No/Nº 16

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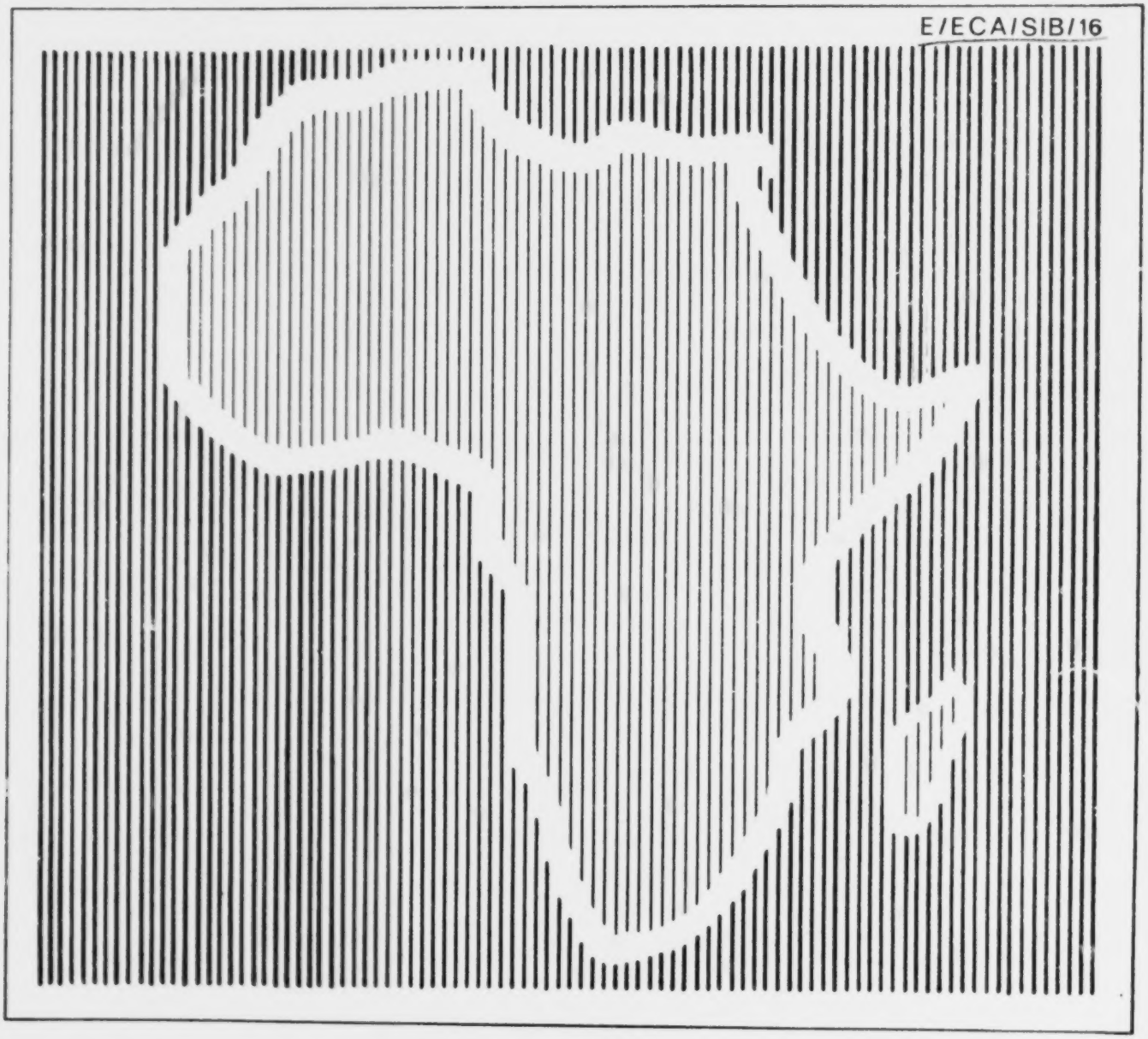

Bulletin d'information statistique pour l'Afrique

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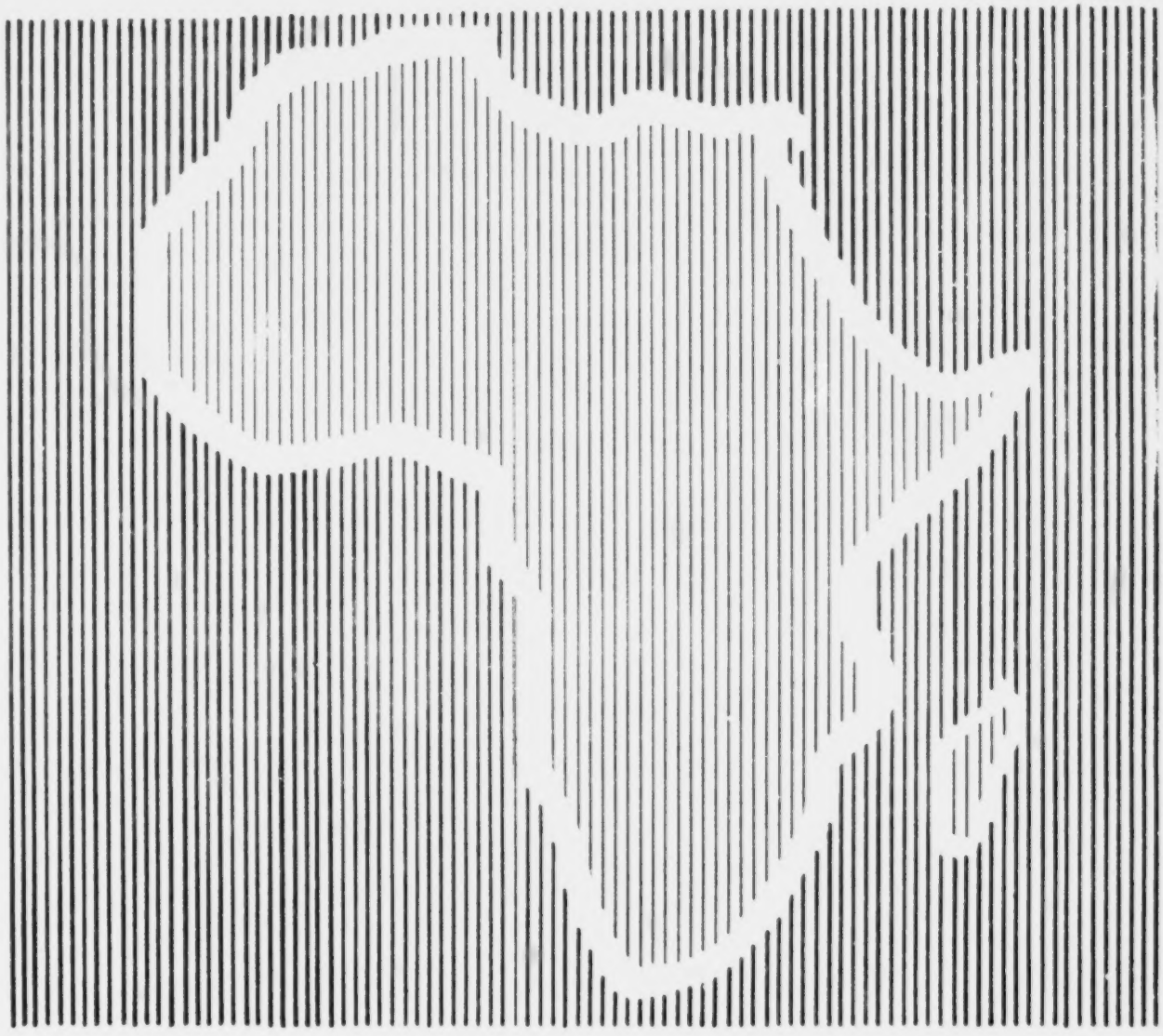

Bulletin d'information statistique pour l'Afrique

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EDITORIAL NOTE

This issue of the Bulletin focuses on a variety of topics which should interest survey statisticians, economists, planners and other policy makers. The first paper discusses the important subject of developing Africa's public debt, while the second paper provides a status report about the implementation of the 1983 World Programme of Industrial Statistics in the African region. The following three papers are on household surveys - their integration, the need for a more cost-effective approach in their implementation and the issue of income stratifications for income, consumption and expenditure surveys. These papers contain valuable information for African countries that have shown interest in the African Household Survey Capability Programme (AHSCP). The sixth paper evaluates the problems survey statisticians face with respect to the classifications and definitions of urban and rural localities in Africa. The last paper on concepts, classifications and definitions pertaining to fertility and mortality highlights African usages and adaptations.

Following the practice adopted for the previous issues of this Bulletin, the articles in this issue have been given in their original language (English), with a short summary in French, which is ECA's other working language.

NOTE DE LA REDACTION

Le présent numéro du Bulletin est consacré à une variété de sujets qui devraient intéresser les statisticiens d'enquête, les économistes, les planificateurs et autres responsables. Le premier document examine la question importante de la dette publique de l'Afrique en développement tandis que le second fournit des informations sur la mise en oeuvre du Programme mondial de statistiques industrielles de 1983 dans la région africaine. Les trois documents suivants sont consacrés aux enquêtes sur les ménages - leur intégration, le besoin d'une approche plus rentable pour leur mise en oeuvre et le problème de la stratification des revenus pour les enquêtes sur le revenu, la consommation et les dépenses. Ces documents contiennent des informations précieuses pour les pays africains qui se sont intéressés au Programme africain concernant la mise en place de dispositifs d'enquête sur les ménages. Le sixième document évalue les problèmes que doivent surmonter les statisticiens d'enquête lorsqu'il s'agit de classifier et de définir les localités urbaines et rurales en Afrique. Le dernier document consacré aux concepts, classifications et définitions relatifs à la fécondité et à la mortalité passe en revue les usages africains, ainsi que les méthodes qui ont été adoptées au contexte africain.

Conformément à l'habitude prise pour les numéros antérieurs, les études ont été présentées dans la langue du texte initial et résumées dans une autre langue de travail de la CEA, à savoir le français.

THE EXTERNAL PUBLIC DEBT OF DEVELOPING AFRICA, 1971-1980

Introduction

The total outstanding external debt drawn by 40 developing African countries 1/ for which debt information for this paper was available 2/ increased from $10.5 billion 3/ at year-end 1971 to $76.8 billion at year-end 1980 4/. This was the position as regards disbursed debt. When undisbursed balances were included total outstanding external debt obligations was $15.6 billion and $107.3 billion at year-end 1971 and 1980 respectively. See table 1.

These public and publicly guaranteed external debts consist of all liabilities repayable in foreign currency, goods or services with an original or extended maturity of over one year. They do not therefore, cover private debt from private sources; they do not include commercial short-term debts of the public sector, although the use of short-term credits for long-term financing has been on the increase of late in some countries; they do not include military debts which for some countries are not only already sizeable but growing. For these among other reasons, it appear that the total external debt of the 40 countries is larger than it would appear to be from the figures given in table 1. The magnitude and structure of such obligations are a matter for some thought in the midst of the present uncertain world economic conditions which continue to affect negatively the export revenues and the debt service prospects of developing Africa.

This unprecedented pace of borrowing in the 1970s was not without cause. The increase in the value of imported fuels, minerals, etc., which registered an increase of 145 per cent between 1973 and 1974 alone after an average annual increase of 13 per cent between 1970 and 1973, served directly to increase the value of developing Africa's import bill, transport costs, the price of manufactures, fertilizers and more generally the cost of living. Other causes were the related world recession which reduced the rate of growth of her exports, and the increased access to external private capital markets.

1/ Source: World Debt Tables: World Bank.

2/ Excluding Socialist People's Libyan Arab Jamahiriya, Cape Verde, Guinea-Bissau, Angola, Equatorial Guinea, Sao Tome & Principe, Mozambique, Seychelles, Djibouti, Namibia, Reunion, Zimbabwe and Western Sahara because of lack of relevant data.

3/ Values expressed in this paper are in United States Dollar.

4/ All references to developing Africa in this study refer to 40 States unless otherwise stated.

Table 1-1: External public debt of developing African countries as at 31 December
(millions of US Dollars)

Sub-region	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
North Africa	7190.2	8214.0	11356.7	15156.6	22839.5	28549.2	38840.2	49284.4	58000.2	57609.2
Outstanding (disbursed)	4868.5	5382.0	7430.5	4507.4	13264.4	16694.5	24087.3	32175.6	38058.5	42193.3
Outstanding (undisbursed)	2321.7	2832.0	3926.2	10649.2	9575.1	11854.7	14752.9	17108.8	19941.7	15415.9
West Africa	3746.4	4206.3	5811.3	6735.3	7569.6	8821.5	11475.8	15891.9	21298.5	23949.4
Outstanding (disbursed)	2696.7	2979.8	4073.9	4691.2	4996.3	5469.3	6995.3	10311.3	13692.2	16440.3
Outstanding (undisbursed)	1049.7	1226.5	1737.4	2044.1	2573.3	3352.2	4480.5	5580.6	7606.3	7509.1
Central Africa	1410.8	1667.3	3061.7	4514.4	5361.3	6698.6	7693.2	9601.8	11307.6	11055.4
Outstanding (disbursed)	882.3	1173.4	1796.5	2530.0	3371.8	4524.5	5839.9	7285.0	8598.0	8731.1
Outstanding (undisbursed)	528.5	493.9	1265.2	1984.4	1989.5	2174.1	1853.3	2316.8	2709.6	2324.3
East amd Southern Africa	3229.9	3699.1	4384.9	5535.8	6551.8	7525.3	9080.1	10961.7	12801.1	14656.7
Outstanding (disbursed)	2013.7	2302.8	2635.0	3138.2	3919.3	4558.0	5485.8	6362.6	7726.0	9402.1
Outstanding (undisbursed)	1216.2	1396.3	1749.9	2397.6	2632.5	2967.3	3594.3	4599.1	5075.1	5254.6
Africa	15577.3	17786.7	24614.6	31942.1	42322.2	51594.6	67089.3	85739.8	103407.4	107270.7
Outstanding (disbursed)	10461.2	11838.0	15935.9	14866.8	25551.8	31246.3	42408.3	56134.5	68074.7	76766.8
Outstanding (undisbursed)	5116.1	5948.7	8678.7	17075.3	16770.4	20348.3	24681.0	29605.3	35332.7	30503.9

Table 1-2: External public debt of developing African countries as at 31 December

(Percentages)

Sub-region	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
North Africa										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Disbursed	67.7	65.5	65.4	42.3	58.1	58.5	62.0	65.3	65.6	73.2
Undisbursed	32.3	34.5	34.6	57.7	41.9	41.5	38.0	34.7	34.4	26.8
West Africa										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Disbursed	72.0	70.8	70.1	69.7	66.0	62.0	61.0	64.9	64.3	68.6
Undisbursed	28.0	29.2	29.9	30.3	34.0	38.0	39.0	35.1	35.7	31.4
Central Africa										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Disbursed	62.5	70.4	58.7	56.0	62.9	67.5	75.9	75.9	76.0	79.0
Undisbursed	37.5	29.6	41.3	44.0	37.1	32.5	24.1	24.1	24.0	21.0
East and Southern Africa										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Disbursed	62.3	62.3	60.1	56.7	59.8	60.6	60.4	58.0	[illegible]	64.1
Undisbursed	37.7	37.7	39.9	43.3	40.2	39.4	39.6	42.0	39.6	35.9
Africa										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Disbursed	67.2	66.6	64.7	46.5	60.4	60.6	63.2	65.5	65.8	71.6
Undisbursed	32.8	33.4	35.3	53.5	39.6	39.4	36.8	34.5	34.2	28.4

Trends in developing Africa's borrowing

Economic growth for most African countries in the 1960s necessitated increased capital which resulted in increased indebtedness not only because of dwindling official assistance flows but also because the process of growth itself accelerated. Governments borrowed as development programmes got under way and external debt rose rapidly as a growing list of countries reached the 'take off' stage. Their record of economic growth confirms that they did indeed, in general, make good use of this external finance. In the period 1960-1970 these countries as a whole sustained average annual rates of growth of gross domestic product of 5 per cent and investment by about 6 per cent. Though debt data for African countries for the 1960s are fragmentary, nevertheless they indicate that the late 1960s were periods of accelerated borrowing. Total outstanding external debt owed by the 40 countries covered in this paper was $7.5 billions in 1969. Between 1970 and 1972 just before the oil price rise the average annual growth of these obligations was 17 per cent, this rate accelerated to 27 per cent between 1973 and 1979.

During the period 1971 to 1980 total debt outstanding including undisbursed for the group increased to over 580 per cent while disbursed debt increased by over 600 per cent in nominal terms for the same period. Unlike the 1960s a not insignificant proportion of this borrowing was channelled to the purchase of consumption goods as the output of goods and services declined progressively in most countries except those with minerals including petroleum and certain selected agricultural commodities. For example, the large population movements from the countryside to the cities in search of urban employment caused a severe drain on the agricultural output of most countries. Between 1970 and 1980 the volume of total food imports by African countries increased by an average annual rate of 8.4 per cent. Stagnating exports and high food import demand led to balance of payment deficits which were largely financed by external borrowing.

Five North African countries- Algeria, Egypt, Morocco, Sudan and Tunisia accounted for 46 per cent and 54 per cent of total outstanding debt of developing Africa's in 1971 and 1980 respectively. The heaviest borrowers were Algeria followed by Egypt and Morocco. For the group as a whole the ratio of total disbursed debt to GDP rose from 28 per cent to 43 per cent between 1971 and 1980 respectively as a result of rapid debt accumulation.

The respective shares in total aggregate borrowing of the African region by the other subregions in 1980 were West Africa 22.3 per cent the largest borrowers being Nigeria followed by the Ivory Coast. The two countries between them accounted for 53.1 per cent of the total outstanding debt of the 14 countries in the subregion. Central Africa's share was 10.3 per cent, with Zaire as the largest borrower among the Central African countries with 44.5 per cent followed by the United Republic of Cameroon with 22.5 per cent of the subregion's. share. The two countries together accounted for 67 per cent of the total debt of 8 countries in the subregion in 1980. For East and Southern Africa the share was 13.7 per cent. Three countries: Kenya, Zambia and the United Republic of Tanzania, among them accounted for 54.0 per cent of the subregions total debt including undisbursed debt in 1980.

Disbursed debt, i.e. total outstanding debt drawn by countries of the respective subregions, at year-end 1980 was as follows: North Africa 73.2 per cent; West Africa 68.6 per cent; Central Africa 79.0 per cent; East and Southern Africa 64.1 per cent of total debt outstanding for each subregion. This implies that while negotiations for new credit were being entered into and new commitments being obtained in 1981, for example, in the case of each country between 20 and 30 per cent of debt contracted in 1980 remained undisbursed, under hardening conditions of debt servicing.

19 and the 26 African Least Developed Countries (LDCs) for which debt data were available recorded an average annual growth rate of aggregate debt of 20.5 per cent during the period 1971 to 1980. Their shares of the total outstanding debt of the 40 countries was 21.1 per cent and 17.6 per cent in 1971 and 1980 respectively. As a group they were owing $3.6 billion in 1971 and $18.9 billion in 1980. Each year throughout the 1970s about 35 per cent of the total aggregate debt outstanding against the LDCs remained undisbursed.

Total commitments to the 40 African economies expanded rapidly from $2.8 billion in 1970 to $14.7 billion in 1980. New credits from official sources was about 45 per cent of total commitments for the years 1973, 1976 and 1979, 51 per cent in 1975, about 58 per cent in 1971 and 1980 and was at its lowest of 41 per cent in 1978, showing that by 1980 these countries were turning away from private to official sources for capital. (See table II).

The annual growth in commitments rose sharply to 122 per cent between 1972 and 1973, declined by 11 per cent between 1975-1976 and 32 per cent in 1979-1980. Disbursement was at a peak (85.3 per cent) in 1973 as compared to 1972, slowed down to 32 per cent in 1974, rose sharply to 76.1 per cent in 1975 and registered the only negative growth of 3.2 per cent for the period in 1976. It grew by 8.6 per cent in 1980 an increase of 3.8 per cent on 1979. The share of disbursements from official sources was 54.1 per cent in 1971 but slowed down to 47.5 per cent in 1980.

The growth of disbursements from 1972 to 1977 was followed by a more rapid growth in debt service payments for the years 1978-1980 resulting in a decline in the ratio of net transfers (net flows less interest payments) to disbursements. Available data show that throughout the period with the exception of 1975, 1976 and 1977 when the percentages were 30.7, 38.0, and 32.0 after amortization and interest payments, only about one-half of disbursement for any year was available for purchasing goods and services from abroad and for addition to reserves. In 1980, 64 per cent of disbursement for that year went into amortization and interest payments, only 36 per cent was available for spending or for reserve accumulation. The ratio of net transfers to disbursements was as high as 69 per cent in 1974-1975 but fell to 36 per cent in 1980. While disbursement in 1980 was $17.2 billion, amortization was $6.5 billion and interest payment $4.5 billion.

The average terms on which countries have borrowed during the period - interest rate, maturity, grace period and grant element are shown in table III. The table shows the hardening of the average terms under which these countries have been borrowing. Average interest rate on new commitments

Table II: External debt of developing African countries

(millions of US Dollars)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
1. Commitments										
Total-Public and private	2763.2	3241.5	7198.3	8151.5	13267.8	11864.7	16114.7	19008.8	21436.7	14670.8
Official sources	1561.2	1885.9	3289.2	4818.7	6749.6	5454.4	9139.8	7865.1	9478.3	8482.1
Private sources	1202.3	1355.5	3909.7	3332.7	6517.8	6410.3	6975.3	11143.8	11958.3	6188.9
2. Disbursements										
Total-Public and private	1962.8	2490.1	4614.6	4762.9	8385.6	8124.2	12600.0	15133.8	15854.5	17223.2
Official sources	1061.6	1265.4	1946.2	2517.5	4629.7	3479.1	5802.7	5401.8	5974.9	8185.5
Private sources	901.1	1224.7	2668.5	2245.4	3755.8	4644.7	6796.8	9732.0	9879.1	9037.5
3. Amortizations										
Total-Public and private	754.9	1015.1	1710.7	1770.0	1745.1	2145.8	2538.1	3364.8	4579.8	6495.1
Official sources	300.6	437.7	568.1	550.3	590.5	526.4	745.0	783.8	1029.4	1545.2
Private sources	454.9	577.0	1142.1	1220.4	1155.1	1619.6	1792.6	2581.3	3550.1	4950.3
4. Net flows										
Total-Public and private	1207.9	1475.0	2905.5	2992.0	6640.5	5978.4	10061.9	11769.0	11274.7	10728.1
Official sources	761.6	827.8	1379.7	1966.9	4039.4	2952.9	5057.6	4619.4	4944.9	6641.1
Private sources	446.7	647.4	1526.2	1024.9	2601.2	3025.1	5004.2	7150.1	6328.9	4087.4
5. Interest payments										
Total-Public and private	270.9	350.5	515.6	704.7	834.7	1013.1	1495.0	2120.8	3143.6	4500.1
Official sources	150.6	194.9	250.8	296.3	390.7	449.2	751.4	912.1	929.4	1339.9
Private sources	120.5	155.6	264.7	407.9	443.9	563.3	743.7	1208.6	2214.0	3160.2
6. Net transfers										
Total-Public and private	937.0	1124.5	2389.9	2287.3	5805.8	4965.3	8566.9	9648.2	8131.1	6228.0
Official sources	611.0	632.9	1128.9	1670.6	3648.7	2503.7	4306.2	3707.3	4015.5	5301.2
Private sources	326.2	491.8	1261.5	617.0	2157.3	2461.8	4260.5	5941.5	4114.9	927.2

Table III: Average terms of borrowing commitments of public and publicly guaranteed debt of developing African countries 1971-1980

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Official source debt										
Interest rate (%)	2.9	2.3	2.5	3.0	3.4	3.2	3.9	3.3	3.2	3.6
Maturity (years)	24.6	28.3	28.9	28.5	28.2	27.8	27.3	26.6	25.4	24.8
Grace period (years)	6.5	...	7.4	...	7.0	7.2	6.6	6.8	6.7	6.1
Grant element (%)	49.4	55.6	56.0	53.0	49.9	51.5	45.8	48.8	45.8	44.9
Private source debt										
Interest rate (%)	4.8	4.7	5.1	5.0	5.6	5.6	5.9	7.7	7.2	8.0
Maturity (years)	6.3	6.2	6.2	5.0	6.2	5.9	6.5	6.8	6.8	6.6
Grace period (years)	1.7	...	1.7	...	1.5	2.1	1.8	2.1	2.1	1.9
Grant element (%)	9.2	7.3	6.8	4.7	5.5	5.6	6.8	1.6	0.6	-2.5

... Data not available.

Table IV: Distribution of African countries by size of per capita debt

Per capita debt	Countries
51 - 150	Burundi, Central African Republic, Chad, Ghana, Lesotho, Malawi, Mali, Nigeria, Rwanda, Sierra Leone, Tanzania, Uganda, Upper Volta.
151 - 300	Benin, Cameroon, Comoros, Ethiopia, Kenya, Madagascar, Niger, Senegal, Sudan, Zaire.
301 - 450	Botswana, Egypt, Gambia, Guinea, Liberia, Somalia, Swaziland, Togo.
451 - 600	Mauritius, Morocco, Zambia.
601 - 750	Congo, Ivory Coast, Tunisia.
751 and above	Algeria, Gabon, Mauritania.

while just about 1 percentage point higher in 1980 than in 1971 for official source debt the corresponding figure for the same period for private source debt was 3 percentage points higher, an unwelcome development, given the fact that some of the heaviest borrowers in the region were turning increasingly to private sources of funds which was the real causes of harder average terms on lending. While average maturities have been about 24 years for debt from official sources those for private sources have been about 6 years. Grace period was about 7 years for official source lending as against about 2 years for private source lending.

Not all countries have enjoyed equal access to external credits with the result that the size and composition of indebtedness differ widely. It would appear that banks have tended to prefer lending to countries which had at the time of borrowing, extremely attractive prospects either in the production and export of primary products, such as, for example, Algeria, Nigeria and Zaire, or because their economic prospects were generally thought to be good, e.g. Kenya, Botswana, etc. Countries dependent on few resources, the export of one or two primary products and with growth rates which have not been impressive have generally not been very attractive to external private creditors. Borrowing was therefore heavily concentrated in a few of the 40 countries, for example, six countries, Algeria, Egypt, Morocco, Ivory Coast, Nigeria and Zaire accounted for 59.4 per cent of total external debt outstanding against the 40 economies in 1980.

At year end 1980 total outstanding disbursed external debt for the 40 economies stood at $76.8 billion 29 per cent of GDP as against $10.5 billion or 18 per cent of GDP in 1971. The structure of the debt and the ammount and the structure of the debt burden reflect the hardening of conditions and the shortening of terms for commercial borrowing. African economies cannot afford to continue accumulating external indebtedness at the rate and under terms and conditions that prevailed especially in the late 1970 not so much because of the present aggregate size of the debt but because of its structure, particularly the bunching of maturities which has been a source of debt management problems for a number of countries in the region.

The shift in borrowing to private sources have in general caused a hardening of terms of borrowing. Although substantial borrowing is still being obtained through official channels, for example, the International Monetary Fund, the significance of official financing vis-a-vis other sources of financing for most countries was on the decline in the 1970s. Table V shows the increasing role of private lenders, i.e. suppliers credits, credits from financial markets particularly private banks, in financing the current account deficits of developing African countries. While official financial sources provided about 71 per cent of aggregate debt and 54 per cent of disbursement in 1971 this ratio dropped to 59 per cent for aggregate debt and 47 per cent for disbursement in 1980. The absence of conditions on commercial borrowing made it an attractive proposition, in preference to, for example, conditional IMF-base finance.

Table V-1: External public debt (including undisbursed) of developing African countries by type of creditors
(millions of US Dollars)

Sub-region	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
North Africa										
All lenders	7190.2	8214.0	11356.7	15156.6	22839.5	28549.2	38840.2	49284.4	58000.2	57609.2
Official lenders	4924.9	5336.8	6825.9	9011.9	12467.1	15091.1	21235.2	25317.2	29761.3	31712.8
Private lenders	2265.3	2877.2	4530.8	6144.7	10372.4	13458.1	17605.0	23967.2	28238.9	25896.4
West Africa										
All lenders	3746.4	4206.3	5811.3	6735.3	7569.6	8821.5	11475.8	15891.9	21298.5	23949.4
Official lenders	2904.0	3243.6	4040.7	4811.3	5594.4	6434.5	7610.0	9037.8	10873.3	12468.4
Private lenders	842.4	962.7	1770.6	1924.0	1975.2	2387.0	3863.8	6854.1	10425.2	11481.0
Central Africa										
All lenders	1410.8	1667.5	3061.7	4514.4	5361.3	6698.6	7693.2	9601.8	11307.6	11055.6
Official lenders	828.8	911.9	1375.8	1977.8	2550.8	3274.9	3898.8	5128.5	6653.8	6957.6
Private lenders	582.0	755.6	1689.9	2536.6	2810.5	3423.7	3794.4	4473.3	4653.8	4098.0
East and Southern Africa										
All lenders	3229.9	3699.1	4384.9	5535.8	6551.8	7525.3	9080.1	10961.7	12801.1	14656.7
Official lenders	2442.6	2889.9	3694.4	4834.8	5497.6	6249.5	7695.2	9046.0	10241.1	12110.9
Private lenders	787.3	809.2	690.5	701.0	1054.2	1275.8	1484.9	1915.7	2560.0	2545.8
Total developing Africa										
All lenders	15577.3	17786.9	24614.6	31942.1	42322.2	51594.6	67089.3	85739.8	103407.4	107270.9
Official lenders	11100.3	12382.2	15936.8	20635.8	26109.9	31050.0	40339.2	48529.5	57529.5	63249.7
Private lenders	4477.0	5404.7	8677.8	11306.3	16212.3	20544.6	26750.1	37210.3	45877.9	44021.2

Table V-2: External public debt (including undisbursed) of developing African countries by type of creditor (percentages)

Sub-region	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
North Africa										
All lenders	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Official lenders	68.5	65.0	60.1	59.5	54.6	52.9	54.7	51.4	51.3	55.0
Private lenders	31.5	35.0	39.9	40.5	45.4	47.1	45.3	48.6	48.7	45.0
West Arrica										
All lenders	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Official lenders	77.5	77.1	69.5	71.4	73.9	72.9	66.3	56.9	51.1	52.1
Private lenders	22.5	22.9	30.5	28.6	26.1	27.1	33.7	43.1	48.9	47.9
Central Africa										
All lenders	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Official lenders	58.7	54.7	44.9	43.8	47.6	48.9	50.7	53.4	58.8	62.9
Private lenders	41.3	45.3	55.1	56.2	52.4	51.1	49.3	46.6	41.2	37.1
East and Southern Africa										
All lenders	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Official lenders	75.6	78.1	84.3	87.3	83.9	83.0	84.7	82.5	80.0	82.6
Private lenders	24.4	21.9	15.7	12.7	16.1	17.0	15.3	17.5	20.0	17.4
Total developing Africa										
All lenders	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Official lenders	71.3	69.6	64.7	64.6	61.7	60.2	60.1	56.6	55.6	59.0
Private lenders	28.7	30.4	35.3	35.4	38.3	39.8	39.9	43.4	44.4	41.0

Most developing African countries therefore resorted to borrowing from private financial markets, principally commercial banks for loans, with the result that the debt structure shifted towards shorter maturities. Some countries over extended on their debt obligations as a result of excessive commercial borrowing. This situation was occurring at a time when the foreign exchange reserves of some countries were already inadequate and insufficient to cover three months imports. That these reserves were in many cases already inadequate is suggested by the reluctance of some countries to reduce them further and the preference for increased borrowing that was shown.

A related problem has been the tendency for countries to be over-committed to commercial borrowing under harder lending terms thus imposing strains on, and deferring necessary adjustments to, their economies. The average terms of such borrowing have been hardening principally because some of the heaviest borrowers were turning increasingly to private sources of funds but also because more traditional lenders have themselves been raising their nominal rates.

Because of their terms, maturity and distribution, credit flows from private sources may not constitute an adequate means for providing the external financial resources needed by developing African countries. Short-term external finance is probably appropriate for dealing with short-term balance-of-payments problems. Persistent current account deficits of the magnitude which some developing African countries have been facing are near insupportable and cannot be indefinitely sustained. External financing of imports particularly of consumption goods cannot substitute for the re-structuring of African economies to the new economic situation called for in the Lagos Plan of Action for the implementation of the Monrovia strategy and the Final Act of Lagos. On the contrary such financing should be utilized in such a way that it permits developing African countries to adapt their production, exports, imports investments and saving patterns to new situations. The aggregate current balance-of-payments deficit of 23 out of the 40 developing African countries covered in this paper jumped from $1.6 billion in 1971 to $13.0 billion in 1978. Fortunately however, sharp increases in export receipts in 1979 and 1980 brought about significant reduction in the deficits in those years.

Measuring the debt burden

Various indicators have been used to guage the extent of the burden of debt on countries. These measures include the debt service ratio (DSR), the ratio of external debt outstanding to gross national product (GNP) and gross domestic product (GDP) and the ratio of debt service to GNP and GDP.

Table VI-1 gives the debt service ratios (DSRs) for developing African countries. These ratios relate current debt service payments to current export earnings and have the advantage of showing the short-run-rigidity in the debtors balance-of-payments and the pressure to which debtor countries would become exposed if their export earnings fluctuated or their imports

Table VI-I: Debt service ratios of African countries 1/

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
NORTH AFRICA										
Algeria	5.8	14.0	12.2	12.7	8.7	13.0	15.3	20.4	25.9	23.9
Egypt	28.8	28.6	40.2	21.7	22.5	18.5	24.2	22.3	15.8	18.9
Morocco	10.2	10.5	8.3	5.5	5.7	7.2	10.7	19.7	21.8	28.0
Socialist People's Libyan Arab Jamahiriya	...	...	...	...	...	...	...	...	...	...
Sudan	1.3	11.8	12.8	14.2	20.3	15.1	8.7	10.5	17.9	17.4
Tunisia	15.2	16.8	10.6	7.1	6.9	6.7	9.5	11.3	10.8	11.8
WEST AFRICA										
Benin	4.0	3.6	1.9	4.8	3.6	2.8	1.9	3.0	2.0	2.5
Cape Verde	...	...	...	...	...	...	...	...	...	...
Gambia	0.9	1.2	1.1	0.8	0.6	0.6	0.5	0.8	0.4	0.6
Ghana	7.4	3.0	3.8	3.9	5.5	5.8	3.4	6.5	5.7	6.0
Guinea	29.2	39.5	29.9	...	14.8	15.0	19.0	19.9	22.4	24.6
Guinea Bissau	...	...	...	...	...	...	...	...	...	...
Ivory Coast	7.7	8.4	7.2	7.9	8.8	8.8	10.4	13.0	18.2	21.6
Liberia	7.5	6.1	5.3	...	7.9	4.6	5.8	5.3	14.5	7.0
Mali	1.2	1.2	5.8	2.3	3.0	3.3	4.5	6.6	4.6	4.4
Mauritania	...	6.6	9.0	6.6	20.7	37.8	22.4	16.3	32.4	11.5
Niger	2.9	2.6	2.0	2.8	4.7	4.5	4.4	2.7	2.5	5.7
Nigeria	3.0	2.8	4.0	1.7	2.7	3.4	0.8	1.1	1.6	2.0
Senegal	4.9	4.1	7.9	5.4	5.7	6.1	6.5	13.8	13.8	22.7
Sierra Leone	7.4	17.2	8.7	8.7	10.3	16.4	10.7	19.3	18.4	16.3
Togo	3.0	6.5	6.9	3.4	9.7	6.7	11.4	14.5	24.4	34.0
Upper Volta	3.7	4.3	3.3	2.8	3.5	3.0	2.2	3.9	4.3	6.8
CENTRAL AFRICA										
Burundi	2.5	6.9	2.5	...	5.6	4.4	2.9	3.5	3.1	7.4
Cameroon Un. Rep. of	4.3	4.4	4.7	4.6	5.3	5.4	5.3	7.4	7.4	14.1
Central Afr. Rep.	2.1	1.7	4.6	5.1	7.9	2.1	4.7	2.6	0.1	4.5
Chad	9.0	4.9	3.5	3.3	5.9	4.1	10.0	11.8	14.2	7.6
Congo	8.7	6.8	8.6	6.8	12.7	8.4	10.5	7.3	18.8	9.4
Equatorial Guinea	...	...	...	...	...	...	...	...	...	...
Gabon	7.2	7.1	14.3	4.1	5.5	6.1	9.2	20.8	17.5	15.1
Rwanda	1.7	2.5	0.2	0.8	0.6	0.8	0.9	1.4	0.6	1.1
Sao Tome & Principe	...	...	...	...	...	...	...	...	...	...
Zaire	4.9	8.1	8.5	12.4	11.0	7.5	8.3	8.2	9.1	...
EAST AND SOUTHERN AFRICA										
Angola	...	...	...	...	...	...	...	...	...	...
Botswana	2.2	3.1	2.6	...	3.1	1.5	1.9	2.5	1.6	1.6
Comoros	...	0.0	2.1	...	4.6	5.6	4.0	2.0	1.4	4.5
Djibouti	...	...	...	...	...	...	...	...	...	...
Ethiopia	10.4	7.6	6.3	5.4	6.9	6.0	5.8	5.8	5.3	5.4
Kenya	5.4	4.6	4.2	4.7	3.6	4.4	3.7	7.0	6.6	8.9
Lesotho	3.0	2.3	2.2	...	1.5	2.2	2.2	3.8	3.5	5.6
Madagascar	4.0	4.3	5.0	3.4	3.0	3.9	3.7	4.3	7.4	10.2
Malawi	7.0	8.6	7.6	7.7	7.9	8.5	10.0	15.3	15.5	18.4
Mauritius	4.2	1.5	1.3	1.0	1.6	1.0	1.6	2.4	3.7	5.5
Mozambique	...	...	...	...	...	...	...	...	...	...
Seychelles	...	...	...	...	...	...	...	...	...	...
Somalia	2.3	3.0	3.6	4.2	3.4	2.6	3.6	3.1	1.5	3.5
Swaziland	...	9.2	9.5	2.1	1.5	0.9	1.0	1.8	2.8	3.2
Tanzania, Un. Rep. of	4.8	12.4	7.0	6.6	5.9	4.4	5.5	6.1	5.6	7.3
Uganda	2.9	3.4	7.7	4.5	4.5	2.3	4.0	4.3	4.9	11.9
Zambia	10.5	13.0	30.9	7.3	10.0	10.0	18.5	21.7	9.5	21.9
Zimbabwe	...	...	...	...	...	...	...	...	...	...

1/ The debt service ratio is the debt service on public and publicly guaranteed medium and long-term debt to exports of goods and non-factor services.

Table VI-2: Debt service indicators

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
NORTH AFRICA										
Principal payments (mill. US$)	465.9	622.6	934.6	1136.4	963.6	1211.7	1634.9	2169.1	3010.6	4294.0
Interest payments "	101.8	161.9	209.0	382.7	441.4	583.9	961.1	1328.0	1985.9	2772.3
Amortization & interest "	567.7	784.5	1143.6	1519.1	1405.0	1795.6	2596.0	3497.1	4996.5	7066.3
Exports "	3853	4527	6701	9908	12460	13919	15953	18047	24327	32761
Debt service ratio (%)	14.7	17.3	17.1	15.3	11.3	12.9	16.3	19.4	20.5	21.6
WEST AFRICA										
Principal payments (mill. US$)	123.9	144.7	260.5	310.5	454.9	658.2	451.2	546.9	862.5	1080.7
Interest payments "	75.3	77.3	103.7	129.0	173.2	180.1	239.2	375.5	620.8	934.6
Amortization & interest "	199.2	222.0	364.2	439.5	628.1	838.3	690.4	922.4	1483.3	2015.3
Exports "	4057	4868	998	13626	13973	16440	20186	18450	25916	33501
Debt service ratio (%)	4.9	4.6	5.2	3.2	4.5	5.1	3.4	5.0	5.7	6.0
CENTRAL AFRICA										
Principal payments (mill. S$)	65.0	84.3	147.0	192.1	196.6	136.8	217.4	350.6	472.0	629.4
Interest payments "	21.4	32.4	61.0	90.1	109.6	108.9	145.4	246.6	307.7	428.7
Amortization & interest "	86.4	116.7	208.0	282.2	306.2	245.7	362.8	597.2	779.7	1058.1
Exports "	1594	1752	2545	3658	3490	3960	4691	5374	6808	8053
Debt service ratio (%)	5.4	6.7	8.2	7.7	8.8	6.2	7.7	11.1	11.5	13.1
EAST AND SOUTHERN AFRICA										
Principal payments (mill. US$)	100.1	163.5	368.6	131.9	130.0	139.1	234.6	298.2	234.7	491.0
Interest payments "	72.4	78.9	141.9	102.9	110.5	140.3	149.3	170.7	229.2	364.5
Amortization & interest "	172.5	242.4	510.5	234.8	240.5	279.4	383.9	468.9	463.9	855.5
Exports "	3164	2996	4660	4768	5626	6169	6934	6806	8512	9573
Debt service ratio (%)	5.5	8.1	11.0	4.9	4.3	4.5	5.5	6.9	5.4	8.9
DEVELOPING AFRICA										
Principal payments (mill. US$)	754.9	1015.1	1710.7	1770.9	1745.1	2145.8	2538.1	3364.8	4579.8	6495.1
Interest payments "	270.9	350.5	515.6	704.7	834.7	1013.2	1495.0	2120.8	3143.6	4500.1
Amortization & interest "	1025.8	1365.6	2226.3	2475.6	2579.8	3159.0	4033.1	5485.6	7723.4	10995.2
Exports "	12668	14143	20904	31960	35549	40488	47764	48677	65563	83888
Debt service ratio (%)	8.1	9.7	10.7	7.7	7.3	7.8	8.4	11.3	11.8	13.1

increased. The average of this ratio for the 40 countries was 8.1 per cent in 1971 and only 8 countries (Egypt, Morocco, Tunisia, Guinea, Chad, Congo, Ethiopia and Uganda) had ratios in excess of this average. During the period 1971-1980, the ratio increased, for some countries rather rapidly, and by 1980 when the group's average ratio was 13.1 per cent 13 countries (Algeria, Egypt, Morocco, Sudan, Guinea, Ivory Coast, Senegal, Sierra Leone, Togo, United Republic of Cameroon, Gabon, Malawi and Zambia) were in excess of this average and in some cases debt service was more than 20 per cent of export earnings.

Although the group's total debt outstadning and disbursed increased almost 1.5 times in 1975 over the total for 1971 this was accompanied by a smaller increase in the group's debt service. In fact, some debt relief was obtained in the three year period 1974 to 1976 when the average debt service ratio was 7.6 per cent about 2 percentage points less than the previous three year average, because of good export performance and considerable increase in the group's export earnings.

Throughout the 1970s however, the debt burden as measured by the DSR was on the increase for each of the subregions and for the group of countries as a whole. The highest ratios were recorded for the North African subregion. See table VI-2. The increase in the debt burden seems to have been relatively less for the major oil-exporting countries, for as table VI-3 shows their debt service as a percentage of exports and GDP was considerably less than that for the non-oil exporting countries.

However, this index alone cannot depict debt service capacity. Countries with relatively low DSRs may default in their debt obligations, others with high DSRs may avoid default. For developing African countries with large export sectors, external debt liabilities may appear fractional in relation to export earnings whereas the more serious effects would lie on internal management, especially savings and the fiscal system. "DSR is not a substitute for indicators of the level of debt outstanding. The correlation between debt outstanding and exports and the DSR is weak and barely significant: the influence of terms is such that to be a "large" debtor does not necessarily imply having "large" debt service obligations during a given period of time". 5/

In 1971, 1975 and 1980 the ratio of debt outstanding and disbursed to GDP for the group of 40 countries was on average 18 per cent, 20 per cent and 29 per cent respectively. With ratios of 10 per cent, 12 per cent and 17 per cent the major oil exporting countries were considerably less while the ratios for the non-oil exporting countries were considerably more than the average for all countries for the three years respectively. In 1980, for example, while the ratio for the 40 economies was 29 per cent that for the non-oil exporting countries was 40 per cent. See Table 6-3.

5/ Describing external debt situations: A roll-over approach "Pierre Dhonte. IMF staff papers Vol. XXII, No1.1, March 1975.

Table VI-3: Debt service indicators

	Debt service as % of exports			Debt service as % of GDP			Debt outstanding (disbursed) as % of GDP		
	1971	1975	1980	1971	1975	1980	1971	1975	1980
Oil exporting countries[1/]	4.3	4.9	10.7	0.8	1.4	3.4	10.3	11.8	16.8
Non-oil exporting countries	10.1	9.1	15.4	2.2	2.4	8.2	21.5	26.1	40.1
All countries	8.1	7.3	13.1	1.7	2.0	5.2	17.9	20.1	28.6

1/ Relates to Algeria, Nigeria and Gabon.

Debt management

Many developing African countries are experiencing great difficulties in compiling statistics on debt. Statistics on public sector internal debt are not compiled in a consistent form and in most cases they are inaccurate. There is the problem of collecting statistics on suppliers credits received by public enterprises. In the case of some north African countries, for example, the number of companies which secure external finance in the form of suppliers credits is large. Data on foreign borrowing in a format which will facilitate aggregation into national reports is essential.

There is therefore an urgent need for strengthening African statistical infrastructure as a basis for effective policy and planning. Policy adjustments and structural changes are now urgently needed to enable developing African countries to reduce the mounting burden of debt and debt service obligations in which some of them are now engulfed, and in time generate sufficient foreign exchange earnings of their own to pay for essential imports. Some countries have carried out major pruning of their imports. The success in holding down imports especially in the late 1970s has kept their combined trade deficit in check despite the fall in primary commodity export prices. It would appear however that the scope for further cuts in imports is now considerably less unless necessary structural adjustments are carried out. Food imports for the region was $1.7 billion in 1971 but peaked to $8.0 billion in 1979. Such dependence on food imports constitutes a severe drain on foreign exchange earnings and is creating serious major constraints in financing development projects.

The African region has enormous resources of minerals, arable and, energy, rivers etc. and is capable of growing more food than it is growing now and can take appropriate measures to reduce food loses. With an average per capita income of about $160 (excluding oil exporting ountries) most of the region's population live in conditions of increasing mass poverty with the result that there is only limited potential to mobilize domestic savings. External finance will therefore continue to be needed as sound policy decisions are being taken to restructure the domestic economy and external payments. Countries will have to use imports efficiently, to control domestic expenditure and inflation and to invest productively. A lesson which has been learnt from the 1970s is that external capital - especially loans on commercial terms - cannot be allowed to delay the process of structural transformation of their economies.

Partly as a result of expected early pay-offs in terms of foreign exchange earnings some African countries are giving a high priority to agriculture for exports. Industrial projects with long gestation periods are being treated with caution. Economic policies are being influenced by consideration and concern over short-term flexibility. The result is that long-term objectives are receiving lower priority.

In 1980 debt repayments and debt service payments accounted for 13 per cent of export earnings for 40 countries of the region, thanks to the increased revenue of the oil exporting countries for that year. Mounting debt and debt service payment can only continue to cause serious strains on African economies, commit the regions exports to foreign markets, direct export earnings to debt service and debt repayment and reduce resources for development.

Conclusion

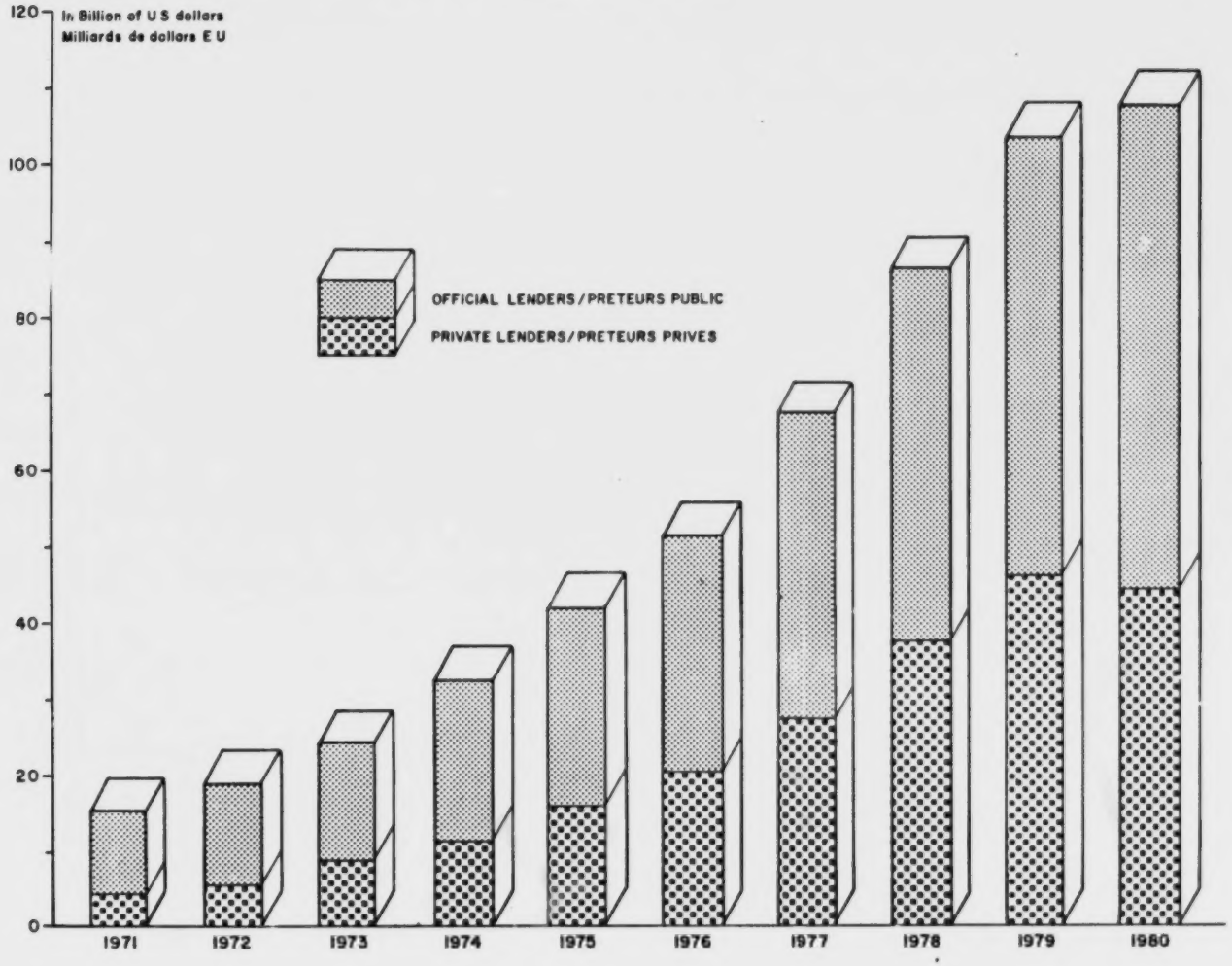
In the period of the 1970s, particularly the years after 1973-74, large current account deficits in a number of developing African countries led to unprecedented external borrowing by these countries to finance the deficits. Much of this borrowing came from private financial markets, principally commercial banks, with the result that the debt structure shifted towards shorter maturities imposing severe pressures on the balance of payments of these countires. It is unlikely that commercial banks may be willing to play a similar role in financing the current account deficit of developing African countries in the 1980s as they did in the 1970s. Even if they were willing, countries may not be able to meet the terms of long-term commercial borrowing. Some African governments failed to recognize that the problem with which they were confronted in the 1970s was of a long-term nature requiring structural adjustment policies, instead they looked to short-term finance as the panacea to what they regarded as essentially a passing problem. Such finance merely borrowed time, it did not and will not substitute for basic structural changes in policies and production patterns which will, among other things, expand their exports, reduce their non-essential imports through efficient domestic production using external loans to supplement domestic finance in investment and structural change.

Table VII: Disbursed debt as percentage of GDP

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
NORTH AFRICA										
Algeria	24.8	24.2	33.4	18.3	31.2	35.8	42.3	50.1	45.4	36.6
Egypt	23.1	22.7	23.3	7.8	38.7	36.0	41.9	45.1	75.4	63.0
Morocco	20.6	18.4	16.4	3.9	19.5	24.9	39.2	38.6	38.8	40.6
Socialist People's Libyan Arab Jamahiriya	...	...	...	...	...	...	...	...	...	...
Sudan	13.9	13.1	11.5	19.6	23.3	23.7	21.6	23.1	28.7	33.5
Tunisia	36.2	31.0	29.3	4.6	23.5	26.0	35.8	39.8	39.7	34.5
WEST AFRICA										
Benin	19.1	13.8	14.3	19.3	17.0	19.7	23.4	23.5	21.3	25.7
Cape Verde	...	...	...	...	...	...	...	...	...	...
Gambia	8.2	10.6	7.9	9.1	8.1	8.5	15.4	12.1	23.3	33.9
Ghana	21.0	26.3	29.9	26.9	23.3	20.8	22.7	19.9	20.7	18.1
Guinea	61.3	63.5	6.5	69.1	66.7	65.5	69.1	71.9	77.7	55.5
Guinea Bissau	...	...	...	...	...	...	...	...	...	...
Ivory Coast	22.2	21.3	22.7	22.3	23.6	25.0	30.8	36.0	39.9	40.4
Liberia	36.6	33.8	28.6	22.5	20.5	21.6	25.2	30.0	35.5	36.9
Mali	87.0	73.8	66.2	76.3	61.5	62.8	62.6	51.7	45.1	43.2
Mauritania	18.2	22.2	36.5	45.7	39.4	73.3	83.8	106.7	98.2	103.3
Niger	9.8	10.0	11.1	13.8	15.3	13.3	9.4	11.7	12.9	17.1
Nigeria	4.3	4.3	6.3	3.9	2.9	1.8	1.7	3.9	5.1	5.9
Senegal	13.7	12.9	14.0	17.4	15.7	18.5	21.8	29.2	30.4	32.6
Sierra Leone	16.0	14.5	15.3	20.0	22.0	24.0	26.4	25.5	26.7	27.1
Togo	15.9	13.2	14.0	16.6	19.6	29.6	44.0	68.0	82.6	80.2
Upper Volta	7.1	5.1	7.0	9.9	10.7	14.9	20.2	22.9	26.5	27.9
CENTRAL AFRICA										
Burundi	3.0	2.8	2.6	2.6	4.3	4.7	7.5	11.3	13.7	15.4
Cameroon Un. Rep. of	12.7	12.5	10.7	11.4	12.1	15.6	21.9	24.5	28.3	26.6
Central Afr. Rep.	11.6	13.5	17.3	20.4	18.5	22.4	23.8	24.7	22.5	21.4
Chad	10.5	6.9	9.2	10.7	9.6	14.0	16.2	18.5	17.7	15.9
Congo	50.7	43.3	40.6	49.1	47.3	54.5	65.1	87.2	72.7	67.4
Equatorial Guinea	...	...	...	...	...	...	...	...	...	...
Gabon	34.5	46.6	47.0	31.7	34.0	35.9	45.5	48.7	40.7	31.8
Rwanda	0.9	1.0	2.7	2.6	42.6	7.2	9.6	11.5	12.3	13.8
Sao Tome & Principe	...	...	...	...	...	...	...	...	...	...
Zaire	17.6	23.5	30.6	37.3	44.8	63.9	62.7	54.0	67.7	69.8
EAST AND SOUTHERN AFRICA										
Angola	...	...	...	...	...	...	...	...	...	...
Botswana	26.5	56.0	53.7	48.7	52.2	53.2	48.9	28.2	22.7	16.7
Comoros	3.5	1.3	3.5	3.9	6.7	34.4	38.0	37.3	38.8	42.1
Djibouti	...	...	...	...	...	...	...	...	...	...
Ethiopia	10.8	11.5	9.6	11.0	12.2	12.5	13.1	13.3	15.3	16.6
Kenya	18.4	17.7	17.7	17.4	17.6	20.2	20.4	20.4	23.5	24.6
Lesotho	10.7	11.5	6.6	7.1	9.3	9.8	11.2	11.8	17.4	19.1
Madagascar	11.2	8.8	9.0	8.8	9.4	10.7	12.6	13.2	21.6	30.5
Malawi	34.7	36.8	41.0	39.2	39.4	41.0	42.4	46.9	38.9	41.2
Mauritius	15.9	12.1	10.3	7.3	8.1	8.3	8.3	14.7	19.1	26.1
Mozambique	...	...	...	...	...	...	...	...	...	...
Seychelles	...	...	...	...	...	...	...	...	...	...
Somalia	35.8	38.5	38.4	43.7	46.2	51.9	56.1	69.7	68.4	50.5
Swaziland	25.3	23.1	16.8	13.7	11.7	15.6	18.1	33.3	39.5	35.5
Tanzania, Un. Rep. of	22.2	23.6	24.8	27.7	31.0	32.6	30.9	26.7	27.0	28.1
Uganda	9.2	10.3	9.1	8.2	7.8	7.9	8.1	11.4	14.7	13.3
Zambia	35.6	33.9	26.7	25.9	44.5	47.9	56.8	51.8	48.8	47.9
Zimbabwe	...	...	...	...	...	...	...	...	...	...

EXTERNAL PUBLIC DEBT OF FORTY AFRICAN COUNTRIES BY TYPE OF CREDITORS
(Outstanding including undisbursed)

DETTE PUBLIQUE EXTERIEURE DE QUARANTE PAYS AFRICAINS PAR CATEGORIE DE CREANCIERS
(Encours y compris les montants non décaissés)

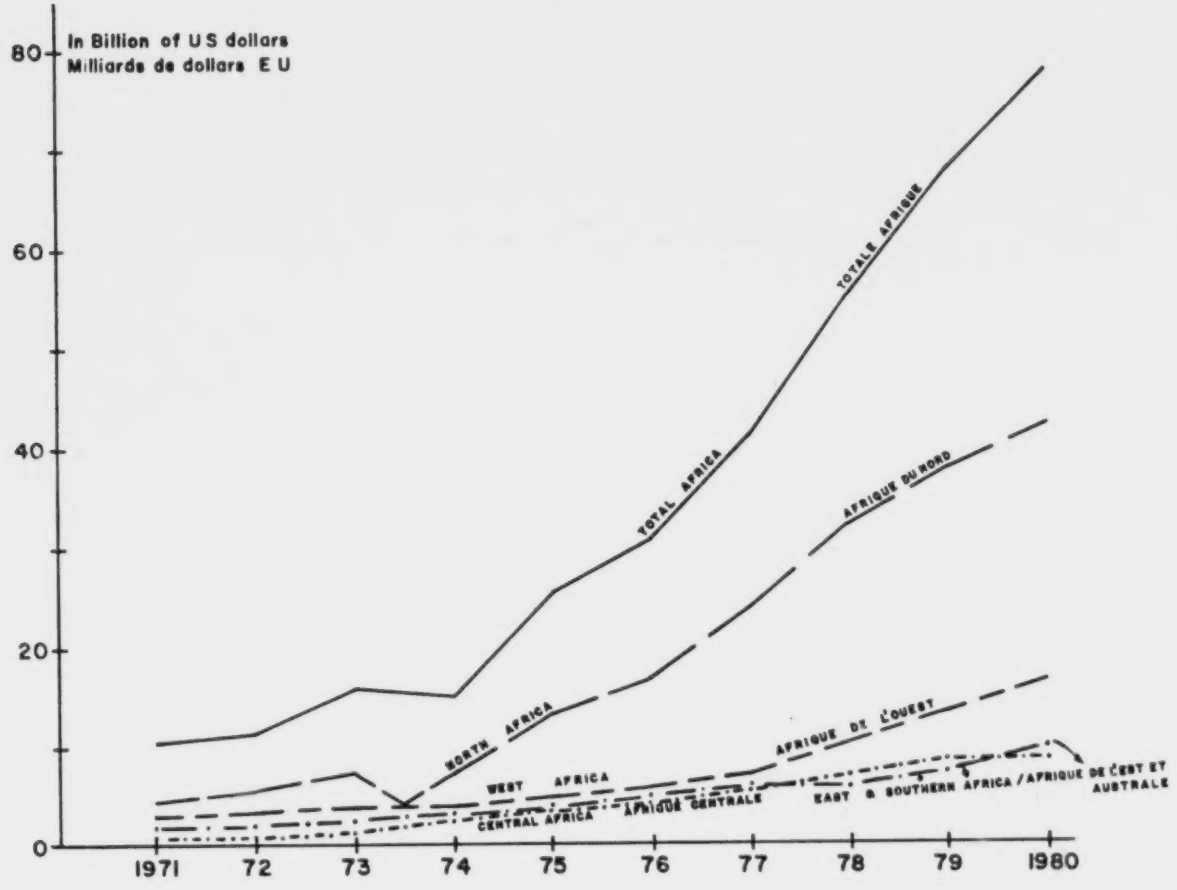


EXTERNAL PUBLIC DEBT OF DEVELOPING AFRICAN COUNTRIES AS OF 31 DECEMBER[1/]

(Disbursed only)

DETTE PUBLIQUE EXTERIEURE DE PAYES AFRICAINS COMMENSANT LE 31 DECEMBRE[1/]

(Montants decaisses seulement)



[1/] Data relates to forty countries

[1/] Le données sont pour quarante pays seulement

DETTE PUBLIQUE EXTERIEURE DES PAYS AFRICAINS EN DEVELOPPEMENT

Résumé en français

La dette totale en souffrance des 40 pays africains en développement, pour lesquels on a pu réunir les données requises dans le cadre de la présente étude, est passée de 10,5 milliards de dollars EU à la fin de 1971 à 76,8 milliards à la fin de 1980. Ces chiffres concernaient uniquement les encours. Si l'on prenait en compte les emprunts non décaissés, l'endettement total des pays en question s'élèverait respectivement à 15,6 milliards et 107,3 milliards de dollars EU à la fin des années 1971 et 1980.

Ces montants représentent les emprunts contractés ou garantis par l'Etat et ne comprennent pas, par conséquent, i) les emprunts privés contractés auprès de sources de financement privées; ii) les dettes commerciales à court terme du secteur public; iii) les dettes contractées à des fins militaires qui sont non seulement difficiles à évaluer pour un certain nombre de pays, mais aussi en augmentation constante. L'ampleur et la structure d'un tel endettement extérieur suscitent les plus vives inquiétudes en cette période marquée par une crise économique mondiale qui continue d'influer négativement sur les recettes d'exportations et les perspectives de règlement du service de la dette extérieure des pays africains en développement.

Au cours de la période 1971-1980, la dette totale en souffrance des 40 pays en question, y compris les emprunts non décaissés, s'est accrue de plus de 580 p.100, tandis que les encours ont augmenté de plus de 600 p.100 en termes nominaux au cours de la même période. Contrairement aux années 60, une part non négligeable des emprunts a servi à l'achat de biens de consommation, la production des biens et services ayant décliné au fil des ans dans la plupart des pays, à l'exception des pays producteurs de minéraux comprenant le pétrole et certaines denrées agricoles.

Cinq pays d'Afrique du Nord, à savoir l'Algérie, l'Egypte, le Maroc, le Soudan et la Tunisie, ont accumulé à eux seuls respectivement 46 p.100 et 54 p.100 de la dette publique extérieure de l'Afrique en développement en 1971 et 1980. Les parts des autres sous-régions en 1980 étaient de 22,3 p.100 pour l'Afrique de l'Ouest, 10,3 p.100 pour l'Afrique centrale et 13,7 p.100 pour l'Afrique de l'Est et australe.

L'encours de la dette, c'est-à-dire le montant des emprunts décaissés, se répartissaient à la fin de 1980 de la manière suivante : 73,2 p.100 pour l'Afrique du Nord, 68,6 p.100 pour l'Afrique de l'ouest, 79 p.100 pour l'Afrique centrale et 64,1 p.100 pour l'Afrique de l'Est et australe. Ceci laisse supposer que, pendant que des négociations portant sur de nouveaux crédits étaient en cours et que de nouveaux engagements de prêts étaient sur le point d'être conclus en 1981 par exemple, environ 20 à 30 p.100 de la dette contractée en 1980 par chaque pays se trouvait encore dans les caisses des bailleurs de fonds sous des conditions draconiennes quant au service de la dette.

Au cours des années 70, les conditions d'octroi des crédits aux pays de la région devinrent plus difficiles. Les taux d'intérêt moyens pratiqués sur les nouveaux engagements de prêts ont progressé d'un point en 1980 par rapport à 1971 en ce qui concerne les sources publiques de financement, contre trois points pour les sources privées. Il s'agit là d'une évolution malencontreuse, puisque certains des pays les plus endettés se tournent de plus en plus vers les sources de financement privées qui sont à l'origine du renchérissement des taux d'intérêt. De même, alors que les délais moyens de remboursement étaient d'environ 24 ans pour les emprunts contractés auprès des sources publiques de financement, ils n'étaient que de 6 ans s'agissant des sources privées. Enfin, le délai de grâce s'étalait sur 7 ans environ pour les sources publiques de financement contre 2 ans seulement pour les sources privées.

En raison des conditions de leur octroi, des délais de leur remboursement et de leur répartition catégorielle, les prêts consentis par les sources privées de financement ne constituent pas pour les pays africains un moyen adéquat de se procurer les ressources financières dont ils ont besoin. Un financement extérieur à court terme est probablement mieux adapté pour résoudre les problèmes à court terme des balances de paiement. Les déficits importants et persistants des comptes courants que connaissaient certains pays africains semblent avoir atteint la limite du tolérable et ne peuvent être supportés indéfiniment. Il est peu probable que les banques commerciales acceptent, dans les années 80, de financer les déficits des comptes courants des pays en développement comme elles le firent dans les années 70. Même si elles sont disposées à le faire, les pays pourraient ne pas être en mesure de satisfaire aux conditions d'octroi des prêts à long terme. Certains pays n'ont pas été à même de reconnaître que le problème auquel ils étaient confrontés dans les années 70 était un problème à long terme qui exigeait des politiques d'ajustement structurel, et non le financement à court terme qu'ils recherchaient comme remède à une situation passagère. Un tel financement a juste suffi pour quelque temps. Il n'a pas pu se substituer et ne se substituera pas aux changements structurels de base des politiques et modes de production qui permettront, entre autres, d'accroître les exportations et de réduire leurs importations de biens non essentiels par le biais d'une production locale efficiente utilisant des crédits extérieurs comme complément aux ressources financières nationales pour réaliser des investissements et des changements structurels.

IMPLEMENTATION OF THE 1983 WORLD PROGRAMME OF INDUSTRIAL STATISTICS IN THE AFRICAN REGION

1. Assessment of the current state of African Industrial Statistics

Although considerable progress has been made in the last twenty years, African industrial statistics still suffer from a number of deficiencies which derive from both the organization of national statistical systems and the inadequacy of existing resources.

It may be noted that a large number of countries in the African region have, within the last twenty years, established programmes of annual and quarterly inquiries on the structure and activities of the industrial sector, which have led to a significant increase in the volume of information available. In addition, most of the African countries follow or adapt, nowadays, the United Nations standards regarding the concepts, definitions and classifications relevant to the collection and analysis of industrial statistics data.

It should be noted, however, that only a limited number of African countries organize industrial censuses on a regular basis and have set up a national integrated system of industrial statistics. Furthermore, most statistical offices in the region still suffer from a serious shortage of skilled personnel and are unable to manage the timely publication of their survey results, the time-lag between the end of the inquiry and the publication of the results being generally from two to four years.

Available African industrial statistics are for the most part incomplete in coverage and defective in terms of quality. Important indicators such as industrial output by product, capital formation by type of capital goods, man-days worked by operatives, raw materials consumed by type and origin, changes in stocks by major components and index numbers of industrial production are not compiled by a large number of countries in the region. In this connection, it has been reported that many countries still face problems of reluctant and unco-operative respondents and that efforts are being made by national statistical offices to overcome this situation through various means such as holding seminars, carrying out publicity campaigns, persuading entrepreneurs, etc.

In another connection, it should be pointed out that the establishment of national industrial directories is also an area which requires very close attention. Most African statistical offices have prepared partial lists of industrial units from social security files and similar administrative sources which, in spite of their use hitherto, are often limited in coverage, fraught with errors and ill-suited to the purposes of industrial surveys.

Finally, little headway has been made in the collection of data on small-scale and household enterprises and establishments, which make an important contribution to certain industries. Only a few surveys of limited scope have been conducted on activities in the informal sector by using various methodologies. These surveys often related to the implementation of sectoral economic development projects, such as promotion of cottage industries in urban areas.

2. Country Participation in the 1983 World Programme of Industrial Statistics

A. General outline

As regards programme implementation at the national level, the information available at present relates to the extent of the anticipated country participation in the Programme, which has been derived from replies to a questionnaire sent by the UN Statistical Office in 1982 to all countries of the world.

Of the thirty-one African countries which replied to the questionnaire, twenty-five indicated that they intended to participate in the Programme and these were: Botswana, Burundi, Central African Republic, Chad, Egypt, Equatorial Guinea, Gambia, Ghana, Ivory Coast, Kenya, Lesotho, Liberia, Mali, Malawi, Morocco, Niger, Nigeria, Sierra Leone, Socialist People's Libyan Arab Jamahiriya, Swaziland, Tunisia, Uganda, United Republic of Cameroon, Zaire and Zimbabwe.

In the case of Chad, Ivory Coast, Kenya, Lesotho, Socialist People's Libyan Arab Jamahiriya, Niger, United Republic of Cameroon and Zaire, participation will be in the form of a special comprehensive inquiry to comply with the requirements of the complete programme. Burundi, Botswana, Egypt, Gambia, Ghana, Liberia, Mali, Morocco, Nigeria, Sierra Leone, Swaziland, Tunisia, Uganda and Zimbabwe indicated that they would extend or elaborate existing inquiries to satisfy the requirements of either the complete or the minimum programme. Finally, Equatorial Guinea is contemplating a special limited inquiry to fulfil the minimum programme.

Arab Republic of Egypt, Burundi, Mali, Morocco, Socialist People's Libyan Arab Jamahiriya and Swaziland reported that they will cover all establishments regardless of size (except cottage industries in the case of Morocco) by complete enumeration. Botswana, Gambia, Ghana, Ivory Coast, Kenya, Lesotho, Liberia, Niger, Nigeria, Sierra Leone, Tunisia, United Republic of Cameroon, Uganda and Zimbabwe will enumerate completely those establishments above a certain size, the establishments below the size being covered by sampling except in Sierra Leone, Tunisia, United Republic of Cameroon, Zaire and Zimbabwe. Government establishments will be completely enumerated in Ghana, Kenya, Lesotho and Liberia. Finally, industrial activities in households will be included in a sample in Botswana, Ghana, Kenya and Niger.

In the twenty-five countries involved, the census results will be classified according to a national scheme which is either in accordance with the International Standard Industrial Classification (ISIC) or fully convertible to ISIC. However, it should be noted that ISIC and the Standard International Trade Classification (SITC) will be used in Liberia to identify the economic activities and commodities respectively, while in Mali the national scheme is based on the Brussels Tariff Nomenclature (BTN).

Three countries of the region (Cape Verde, Mauritius and Tanzania) mentioned that they were not planning to participate in the Programme, for one or more of the following reasons: that they were engaged in other statistical activities with a higher national priority, or they considered

that adequate means were already available for measuring industrial activity to satisfy national purposes, or an industrial census was planned for a different year in accordance with national requirements which precluded participation in the 1983 World Programme.

The three remaining countries (Mauritania, Seychelles and Upper Volta) reported that no decisions had yet been taken, stating that their intentions will be reviewed with due regard to the recommendations, domestic needs and resource limitations.

Finally, among the twenty-five countries which indicated that they would participate in the Programme, sixteen considered that the existing capability and resources were inadequate for carrying out the programme contemplated and that outside assistance was to be sought.

B. Summary of replies from individual countries to the UN Questionnaire on intentions in respect of the 1983 World Programme of Industrial Statistics

(i) NORTH AFRICA

Egypt, Arab Republic of — The Central Agency for Public Mobilization and Statistics (CAPMAS) is planning to extend two existing inquiries in order to satisfy the requirements of the complete programme. These are the annual industrial and the electricity, gas and steam surveys, which cover all establishments of public and private sectors engaged in manufacturing, electricity, gas, steam and repairing services. The proposed inquiries will have the same scope as the annual surveys. It will cover, through complete enumeration, all establishments of public and private sectors regardless of size, except households and Government establishments engaged in ISIC major division 4. The results will be classified according to a national scheme which is in accordance with ISIC. It has been reported that the execution of the proposed industrial inquiries is completely dependent upon the preparation of an up-to-date frame of all establishments through field work in early 1983. Both activities cannot be implemented unless external financial assistance is received.

Morocco — To comply with the requirements of the complete programme, the Statistical Office envisages an extension of the annual survey of manufacturing industries which cover all recognizable manufacturing establishments. The scope of the inquiry to be conducted under the 1983 World Programme will encompass ISIC major divisions 2 and 4. All establishments regardless of size (except those engaged in cottage industries) will be covered by means of complete enumeration. The results will be classified according to a national scheme which is fully convertible to ISIC. Adequate resources are available for carrying out the programme contemplated.

Socialist People's Libyan Arab Jamahiriya	A specail comprehensive inquiry will be conducted to comply with the requirements of the complete programme. The scope of the proposed inquiry will encompass ISIC major divisions 2, 3 and 4. All establishments irrespective of size will be completely enumerated. As regards the classification of the survey results, ISIC will be used in a modified form to suit local conditions. The existing resources are adequate for carrying out the programme.
Tunisia	The existing survey of industrial establishment with ten or more employees will be extended to comply with the requirements of the minimum programme. The scope of the inquiry to be conducted will encompass ISIC major divisions 2, 3 and 4 as well as distributive trade. Its coverage will only include establishments above the cut-off size of 10 persons engaged, which will be completely enumerated. The national scheme, which will be used to classify the survey results, is fully convertible to ISIC. Because of resource limitations, external assistance is required for carrying out the programme contemplated.

(ii) WEST AFRICA

Cape Verde	Cape Verde does not intend to participate in the 1983 World Programme of Industrial Statistics, because the country is currently engaged in statistical activities with higher national priorities. These include preparation of national accounts estimates and a project on the improvement of demographic statistics.
Gambia	It is proposed that the existing annual survey of industrial establishments, which is based on the General Industrial Statistics Questionnaire of the UN Statistical Office, be extended to satisfy the requirements of the complete programme. The scope of the inquiry will encompass ISIC major divisions 2, 3 and 4. Establishments above a cut-off size of five persons engaged will be completely enumerated. In addition, sampling techniques will be used to cover small establishments engaged in blacksmithery, furniture making and repairs, dye making, mechanics and watch/radio repairs. The survey results will be presented according to the national classification system which is in accordance with ISIC. Due to the inadequacy of existing resources, outside assistance is required for carrying out the programme.
Ghana	In order to satisfy the requirements of the complete programme, the Central Bureau of Statistics is planning to extend its quarterly and annual survey of industries. These cover, by complete enumeration, establishments with 30 or more persons engaged. The proposed inquiry will encompass ISIC major divisions 2, 3 and 4. As regards its coverage, complete enumeration is contemplated in

respect of Government establishments and those above a cut-off size of 30 persons, while sampling will be used to survey establishments below that size as well as household industries. The result will be classified according to a national scheme which is fully convertible to ISIC. The existing resources are adequate for carrying out the census.

Ivory Coast

Very little headway has been made in the conduct of surveys on small-scale and cottage industries. However, a few statistical data are available in respect of large- and medium-scale industries. These include sectoral data which are derived from the balance sheets of enterprises paying income tax on the basis of their real profits, index numbers of industrial production and statistical information on the first stage of wood processing.

At present, the setting up of an integrated system of industrial statistics is hindered by the non-existence of a national directory of enterprises and establishments.

It has, therefore, been decided that Ivory Coast should participate in the 1983 World Programme with a view to mitigating the deficiencies of the national industrial statistics system. In this connection, the Statistical Office intends to conduct a special comprehensive inquiry in compliance with the requirements of the complete programme. The scope of the inquiry will encompass ISIC major divisions 2, 3 and 4 as well as distributive trade and services. Enterprises which pay income tax on the basis of their real profits will be completely enumerated, while the other enterprises (small-scale and cottage enterprise, excluding households) will be covered by sampling. The national scheme, which will be used to classify the survey results, is in accordance with ISIC. The execution of the proposed survey will be dependent upon the preparation of a comprehensive enterprises directory. Due to resource limitations, outside assistance is required for carrying out the programme.

Liberia

In order to comply with the requirements of the minimum programme, the Division of Industrial Statistics and Special Survey is planning to extend its quarterly and annual surveys. These cover all establishments employing 20 or more persons and operating or having head offices in Monrovia or its environs. The scope of the proposed inquiry will encompass ISIC major divisions 2, 3 and 4 as well as major divisions 1, 5, 6, 7, 8 and 9. Establishments above a cut-off size of 20 persons engaged and quasi-public corporations will be completely enumerated, while establishments below the size limit of 20 persons engaged (excluding households) will be covered by sampling. ISIC and SITC will be used to identify the economic activities and the commodities respectively. As a preliminary, the Division of Industrial Statistics and Special Surveys intended to prepare a national establishment directory, but it was unable to do so because of financial constraints.

It has been reported that, unless this problem is solved, the Division of Industrial Statistics and Special Surveys will find it difficult to even implement the minimum programme of the 1983 World Programme.

Mali

The annual survey of industrial and commercial establishments which have a regular accounting system will be extended to comply with the requirements of the complete programme. The scope of the proposed inquiry will encompass ISIC major divisions 2, 3 and 4 as well as distributive trade and services. All recognizable establishments regardless of size will be completely enumerated. The results will be classified according to a national scheme which is based on the Brussles Tariff Nomenclature (BTN). Due to the inadequacy of existing resources, outside assistance will be required for implementing the Programme.

Mauritania

No decision has yet been taken.

Niger

A special comprehensive inquiry will be conducted in compliance with the requirements of the complete programme. The scope of the proposed inquiry will encompass ISIC major divisions 2, 3 and 4. Establishments above a cut-off size of 50 persons engaged and joint enterprises will be completely enumerated, while establishments below 50 persons engaged and households will be covered by sampling. The survey data will be classified by using the national scheme which is in accordance with ISIC. External assistance is required for implementing the programme contemplated, because of the inadequacy of existing resources.

Nigeria

The existing survey of manufacturing industries which covers establishments employing ten persons or more will be extended to satisfy the requirements of the complete programme. The scope of the proposed inquiry will encompass ISIC major divisions 2, 3 and 4, as well as distributive trade and construction. As regards the coverage, all establishments above a cut-off size of 10 persons engaged will be completely enumerated, while sampling techniques will be used in the case of establishments below that size. The results of the survey will be in terms of a national scheme which is in accordance with ISIC. The existing resources are adequate for carrying out the programme contemplated.

Sierra Leone

The Annual Survey of Manufacturing Industries will be extended to satisfy the requirements of the complete programme. The census will encompass ISIC major divisions 2, 3 and 4. As regards the categories of statistical units to be involved, the census will cover establishments above a cut-off size of 5 persons and the approach contemplated in this respect is complete enumeration. The national

scheme to be used in classifying the results is in accordance with ISIC. The existing resources are inadequate for carrying out the programme and outside assistance is to be sought.

Upper Volta — No decision has yet been taken.

(iii) CENTRAL AFRICA

Burundi — In order to satisfy the requirements of the complete programme, the statistical office of Burundi envisages an extension of the existing Annual Survey of Industrial and Commercial Enterprises in Bujumbura which keep accounting records. Within the framework of the proposed survey, all industrial establishments regardless of size will be covered by complete enumeration. The national system of classification, which is in accordance with ISIC, will be used in presenting the survey results. The existing resources are inadequate for carrying out the programme and outside assistance is to be sought.

Cameroon, United Republic of — A special comprehensive inquiry will be conducted to comply with the requirements of the complete programme. Its scope will encompass ISIC major divisions 2, 3 and 4. Establishments above the cut-off size of 20 persons engaged will be completely enumerated while those below that size limit will be covered by sampling, household industries being excluded. The census results will be in terms of a national scheme, which is in accordance with ISIC. Outside assistance is needed for carrying out the programme contemplated, since the existing resources are inadequate.

Central African Republic — A census of all enterprises and establishments which keep accounting records has been planned for 1983. This could be, with very minor changes, the country's participation in the 1983 World Programme of Industrial Statistics Programme (minimum programme).

Chad — A special comprehensive inquiry will be conducted in compliance with the requirements of the complete programme. The scope of the inquiry will encompass ISIC major divisions 2, 3 and 4 and other activities, such as distributive trade and services. All establishments regardless of size will be covered by means of sampling, and the survey results will be presented in terms of a national system of classification, which is in accordance with ISIC. The existing resources are inadequate for carrying out the programme and outside assistance is to be sought.

Equatorial Guinea — A special limited inquiry will be conducted to fulfil the minimum programme. Its scope will encompass ISIC major divisions 2, 3 and 4. All establishments will be covered by complete enumeration and the results will be classified according to a national scheme, which is fully convertible to ISIC. Due to resource limitations, outside assistance is required for implementing the programme.

Zaire

It has just been reported that the national census of enterprises above the cut-off size of five persons engaged planned by the statistical office for 1982 has been successfully undertaken. It was envisaged that the census would comply with the requirements of the complete programme. Its scope was expected to encompass ISIC major divisions 1, 2, 3 and 5. As regards the coverage, the approach contemplated was complete enumeration. The national scheme, which in accordance with ISIC, will be used to classify the survey results.

(iv) EAST AND SOUTHERN AFRICA

Botswana

In order to satisfy the requirements of the minimum programme, the Statistical Office envisages an extension of the annual census of production and distribution which covers all the known large establishments plus a sample of the smaller ones, for national accounts purposes. The scope of the inquiry will encompass ISIC major divisions 2, 3 and 4. Establishments above a cut-off size of 5 persons engaged will be completely enumerated, while establishments below that size and households will be covered by sampling and estimation from administrative or other sources respectively. The national scheme, which will be used to classify the data is fully convertible to ISIC. The existing resources (financial and capability) are inadequate for carrying out the programme and outside assistance is to be sought.

Kenya

Kenya will conduct a special comprehensive inquiry in compliance with the requirements of the complete programme. The scope of the inquiry will encompass ISIC major divisions 2, 3 and 4. Establishments above a cut-off size of 5 persons engaged and parastatal establishments will be covered by complete enumeration, while establishments below the cut-off size and households will be surveyed by means of sampling. The national scheme, which will be used for classifying the results, is in accordance with ISIC. The existing resources are inadequate for carrying out the programme and outside assistance is to be sought.

Lesotho

A special comprehensive inquiry will be conducted to comply with the requirements of the complete programme. The scope of the inquiry will encompass ISIC major divisions, 2, 3 and 4. It will cover (i) by complete enumeration, parastatal establishments and establishments above a cut-off size of 10 persons engaged and, (ii) by sampling, households and establishments below the size limit of 10 persons engaged. The results will be in terms of the three-digit level of the national scheme, which is in accordance with ISIC. The existing resources being inadequate for carrying out the programme, outside assistance is to be sought.

Malawi	The statistical office intends to cover the requirements of the 1983 World Programme of Industrial Statistics in a survey of industrial household enterprises, which is planned for January 1984 in connection with a national project on strengthening of the national statistical system. Since the organization of the survey will depend on the availability of personnel and financial resources which are being provided for in the proposed project, the statistical office has not been in a position to give full details on its scope and coverage.
Mauritius	The Statistical Office does not intend to participate in the 1983 World Programme of Industrial Statistics, because the country is planning to conduct, in 1983/84, a Housing and Population Census which is considered to be of higher national priority.
Seychelles	The Statistical Office is not in a position at this time to indicate the country's intentions in respect of the programme. The position will be reviewed with due regard to the recommendations, domestic needs and resource limitations.
Swaziland	The extension of the existing census of industries which covers establishments with ten or more employees is envisaged in order to satisfy the requirements of the minimum programme. The scope of the inquiry to be conducted will encompass ISIC major divisions 2, 3 and 4. All establishments regardless of size, except Government establishments, will be covered by means of complete enumeration. The results will be in terms of the national system of classification which is in accordance with ISIC. The existing resources are adequate for carryint out the programme contemplated.
Tanzania United Republic of	The United Republic of Tanzania will not participate in the programme for the following reasons: (i) A nationwide industrial census was conducted in 1978 in accordance with national requirements; (ii) Adequate means are already available for measuring industrial activity to satisfy national purposes; and participation in the 1983 World Programme is considered unnecessary.
Uganda	The Annual Survey of Industrial Production, which covers establishments with ten or more employees, will be extended to satisfy the requirements of the complete programme. The scope of the census will encompass ISIC major divisions 2, 3 and 4. Establishments above a cut-off size of 5 persons engaged will be covered by means of complete enumeration and the others by sampling. The national scheme, which is fully convertible to ISIC, will be used to classify the results. The existing resources are inadequate for carrying out the programme envisaged.
Zimbabwe	In Zimbabwe, the requirements of the greater part of the Programme will be satisfied by using the census of production

which is conducted annually as a postal inquiry. The scope of the census encompasses ISIC major divisions 2, 3 and 4, while its coverage includes establishments above a cut-off size of $2,000 gross output and the Government Printer only. The results are in terms of the national scheme of classification which is fully convertible to ISIC. The existing resources are adequate for carrying out the census.

C. Follow-up action

The ECA Statistics Division intends to take follow-up action very soon about the undermentioned two categories of countries:

(a) those countries which had not reached a decision in 1982 (Mauritania, Seychelles and Upper Volta) about their participation in the programme and had indicated that their positions will be reviewed later with due regard to the recommendations, domestic needs and resource limitations;

(b) those countries which did not reply to the questionnaire (Algeria, Angola, Benin, Comoros, Congo, Djibouti, Ethiopia, Gabon, Guinea, Guinea-Bissau, Madagascar, Mozambique, Rwanda, Sao Tome and Principe, Senegal, Somalia, Sudan, Togo and Zambia).

The follow-up action will be taken in close collaboration with the UN Statistical Office, which conducted the survey on the anticipated country participation in the Programme.

3. ECA technical backstopping of the programme

A. Regional training workshop, working groups and seminars

Within the framework of the 1983 World Programme of Industrial Statistics, a regional industrial census training workshop for French-speaking African countries was held early in 1983 at Dakar (Senegal), under the co-sponsorship of the Munich Centre for Advanced Training in Applied Statistics, the United Nations Industrial Development Organization (UNIDO) and the United Nations Economic Commission for Africa (UNECA). The workshop, which followed a similar one convened for English-speaking African countries in 1982 by the three agencies, concentrated mainly on the review of the overall planning, co-ordination and direction of national census operations. It was attended by twenty statisticians from the following countries: Burundi, Central African Republic, Chad, Congo, Gabon, Guinea, Guinea-Bissau, Ivory Coast, Madagascar, Mali, Morocco, Niger, Senegal, Togo, United Republic of Cameroon and Zaire.

In addition, four working groups have been planned to deal with data collection on small-scale and household industries (1984 and 1989), the measurement of unmarketed output of industries (1984) and energy statistics (1987). However, it should be kept in mind that the convening of such working groups depends entirely on the availability of funds, as a number of ECA meetings had to be postponed or cancelled in the past few years due to financial constraints.

B. Direct technical assistance

It should be recalled that ECA had worked out in 1982 a quadrennial regional project to provide direct technical assistance to African countries in:

(i) establishing medium- and long-term programmes for the development of industrial statistics, and in specific areas such as improvement of quality and scope of the data collected as well as the coverage of units, development of special data collection techniques dealing with small-scale establishments, and ensuring speedy publication and wide dissemination of surveys results;

(ii) setting up integrated systems of industrial statistics with special emphasis on the establishment of a central authority responsible for industrial surveys, the development of basic concepts, definitions and common systems of classifications, the preparation and maintenance of a central directory of industrial units, and the creation of an industrial data base;

(iii) organizing, conducting, processing, analysing and publishing the results of the national censuses covered by the 1983 World Programme of Industrial Statistics.

The project was scheduled to start in July 1982, but ECA has not so far been successful in obtaining financial support for it. Nevertheless, with the present limited resources available from the ECA regular budget efforts are made to provide possible advisory services to individual countries.

It is hoped that some assistance will also be forthcoming through the National Accounts Capability Programme (NACP) which aims at building up within country capabilities in the field of general economic statistics, such as industrial statistics, prices, agriculture, transport, distributive trade, external transactions, etc. with national accounts as the integrating factor. The World Bank has already indicated that it would participate in the scheme, while French co-operation in this work is still under consideration.

Finally, with respect to small-scale industries, technical assistance requirements could be met to a large extent through the African Household Survey Capability Programme (AHSCP), since the permanent field organizations being developed under this project can assist in the collection of data from family enterprises and establishments.

Conclusion and recommendations

For a long time, it has been recognized that the existing position of industrial statistics in Africa is not at all satisfactory and that, without improvement in this field, the information needed to monitor and evaluate industrial development will not be available.

The urgent need for bridging industrial data gaps derives from the fundamental importance of industrialization in the economic and social development process, which is highlighted in the Lima Declaration and Plan of Action on Industrial Development and Co-operation adopted by the Second General Conference of UNIDO held at Lima in 1975, as well as in the Lagos Plan of Action for the Implementation of the Monrovia Strategy for the Economic Development of Africa passed by the first Economic Summit of the Assembly of Heads of State and Government of OAU in April 1980. Moreover, the Lagos Plan of Action lists industry as a priority area in the developmental process of the African region in general and of each individual African country in particular.

It seems obvious that a reporting system for the review and appraisal of progress achieved in the implementation of both plans will necessarily include, among others, industrial surveys as a major component in each African country. This could be set up through the 1983 World Programme of Industrial Statistics, which is aimed at obtaining comprehensive system of industrial data beginning with a full coverage census for 1983 and will become entirely operational by 1989, sampling methods being used extensively to obtain data from small-scale and household establishments.

Therefore, all countries in the region should respond favourably to the 1983 World Programme of the Industrial Statistics. In implementing the programme, they should above all focus on the organization and conduct of the industrial censuses scheduled for 1983, the gradual building up of national integrated systems of industrial statistics and the development of rational and effective data processing and analyses methods.

Among the twenty-five African countries which have so far indicated that they would participate in the Programme, sixteen considered that the existing capability and resources were inadequate for carrying out the industrial census contemplated and that outside assistance was to be sought. The high number of requests in this connection seems rather unrealistic, since industrial statistics are less expensive than some other kinds of data, the main costs lying in preparing the establishments register, collecting data from small-scale and household units on a sample basis and some spadework in persuading firms and chambers of commerce on the importance of industrial statistics.

However, countries in the region which consider that there is an urgent need for technical assistance in this field, are advised to obtain such assistance through the United Nations Development Programme and other multilateral as well as bilateral donor agencies. Within the limits of resources available to them, the UN Statistics Office and ECA will assist to the best of their ability.

Direct technical assistance could consist of:

(i) Ad hoc advisory missions on the establishment of national medium- and long-term programmes of industrial statistics, development of basic concepts, definitions, systems of classification and prototype questionnaires, preparation of guidelines for ensuring timeliness of data and of tabulation programmes, etc.;

(ii) appointment of experts (short-term and medium-term) for periods not exceeding three years to assist in the development of industrial

directories, improved methodology for annual surveys and of special data collection techniques dealing with small-scale and household industries, and in the organization and conduct of the 1983 industrial census as well as the processing, analysis and publication of the data.

Finally, with regard to financial assistance, as indicated above, activities under the Programme could be funded through agreements concluded with bilateral and multilateral donor agencies. In the case of the United Nations Development Programme in particular, financial assistance might be sought on the basis of national indicative planning figures (IPF).

ANNEX

Latest year for which official or semi official data are available on industry at end June 1983

	General industrial statistics	Commodity production statistics	Index numbers of industrial productions	Energy statistics
NORTH AFRICA				
Algeria	1969	1980	1978	1980
Egypt	1976	1980	1978	1980
Morocco	1969	1980	1980	1980
Socialist People's Libyan Arab Jamahiriya	1976	1980	1971	1980
Sudan	1971	1980	...	1980
Tunisia	1979	1980	1980	1980
WEST AFRICA				
Benin	...	1980	...	1980
Cape Verde	...	1980	...	1980
Gambia	1978	1980	...	1980
Ghana	1977	1980	1981	1980
Guinea	...	1980	...	1980
Guinea Bissau	...	1980	...	1980
Ivory Coast	1980	1980	1979	1980
Liberia	...	1980	...	1980
Mali	...	1980	...	1980
Mauritania	...	1980	...	1980
Niger	1972	1980	...	1980
Nigeria	1976	1980	1981	1980
Senegal	1975	1980	1980	1980
Sierra Leone	...	1980	..	1980
Togo	1976	1980	...	1980
Upper Volta	1978*	1980	...	1980
CENTRAL AFRICA				
Burundi	1974	1980	...	1980
Cameroon Un. Rep. of	1972	1980	...	1980
Central Afr. Rep.	1976	1980	1970	1980
Chad	...	1980	...	1980
Congo	1973	1980	...	1980
Equatorial Guinea	...	1980	...	1980
Gabon	...	1980	...	1980
Rwanda	1979	1980	...	1980
Sao Tome & Principe	...	1980	...	1980
Zaire	1972	1980	1980	1980

* Not complete information

	General industrial statistics	Commodity production statistics	Index numbers of industrial production	Energy statistics
EAST AND SOUTHERN AFRICA				
Angola	1972	1980	...	1980
Botswana	...	1980	...	1980
Comoros	...	1980	...	1980
Djibouti	...	1980	...	1980
Ethiopia	1979	1980	1977	1980
Kenya	1980	1980	1980	1980
Lesotho	...	1980	...	1980
Madagascar	1976	1980	1979	1980
Malawi	1979	1980	1982	1980
Mauritius	1979	1980	...	1980
Mozambique	1973	1980	1973	1980
Seychelles	1979	1980	...	1980
Somalia	1977	1980	...	1980
Swaziland	1979	1980	...	1980
Tanzania, Un. Rep. of	1974	1980	1979	1980
Uganda	1971	1980	1973	1980
Zambia	1974	1980	1981	1980
Zimbabwe	1978	1980	1982	1980

MISE EN OEUVRE DU PROGRAMME MONDIAL DE STATISTIQUES INDUSTRIELLES DE 1983 DANS LA REGION

Résumé en français

1. Participation des pays africains au Programme mondial de statistiques industrielles de 1983

Hormis le Zaïre qui a réalisé en 1982 un recensement national des entreprises dans l'optique des recommandations internationales, aucun des pays de la région ayant annoncé leur participation n'a été en mesure, à l'heure actuelle, de promouvoir un début d'application du Programme. Les indications qui suivent ont été tirées des résultats provisoires d'une enquête lancée en 1981, à l'échelle mondiale, par le Bureau de statistique des Nations Unies.

A ce jour, trente et un pays africains ont réagi à l'enquête des Nations Unies. Vingt-cinq d'entre eux ont indiqué qu'ils envisageaient de participer, sous des formes diverses, au Programme. Parmi ces derniers figurent le Botswana, le Burundi, la Côte d'Ivoire, la Gambie, la Guinée équatoriale, la Jamahiriya arabe libyenne socialiste et populaire, le Kenya, le Lesotho, le Libéria, le Malawi, le Mali, le Maroc, le Niger, le Nigéria, l'Ouganda, la République arabe d'Egypte, la République centrafricaine, la République-Unie du Cameroun, la Sierra Leone, le Swaziland, le Tchad, la Tunisie, le Zaïre et le Zimbabwe.

Les six autres pays africains ayant fait connaître leurs intentions comprennent d'une part, la Haute-Volta, la Mauritanie et les Seychelles, et d'autre part, le Cap-Vert, l'Ile Maurice et la Tanzanie. Les premiers n'ont encore pris aucune décision en la matière, tandis que les seconds ont exclu toute participation au Programme, soit parce qu'ils sont engagés dans des activités statistiques bénéficiant d'une priorité plus élevée, soit parce qu'ils ont prévu un recensement national pour une période différente de celle proposée dans le cadre du Programme ou qu'ils disposent d'autres moyens adéquats pour mesurer l'activité industrielle.

Dans huit des vingt-cinq pays énumérés précédemment, à savoir la Côte d'Ivoire, la Jamahiriya arabe libyenne socialiste et populaire, le Kenya, le Lesotho, le Niger, la République-Unie du Cameroun, le Tchad et le Zaïre, les bureaux nationaux de statistique se proposent d'entreprendre une enquête spéciale exhaustive dans l'optique des recommandations pour le programme complet. Par contre, la Guinée équatoriale projette d'effectuer une enquête spéciale limitée dans le cadre du programme minimum seulement, tandis que le Burundi, la Gambie, le Ghana, le Libéria, le Mali, le Maroc, le Nigéria, l'Ouganda, la République arabe d'Egypte, la Sierra Leone, le Swaziland, la Tunisie et le Zimbabwe envisagent l'extension d'enquêtes existantes pour satisfaire aux exigences de l'un ou l'autre programme.

En ce qui concerne le champ des enquêtes, le Burundi, la Jamahiriya arabe libyenne socialiste et populaire, le Mali, le Maroc, la République arabe d'Egypte et le Swaziland prévoient une couverture complète, par dénombrement exhaustif, de tous les établissements industriels identifiables quelle que soit leur

taille 1/. Dans les autres pays par contre, seuls les grands établissements industriels feront l'objet d'un dénombrement exhaustif, les petits étant généralement couverts par sondage. Par ailleurs, les établissements publics seront recensés au Ghana, au Kenya, au Lesotho et au Libéria, tandis que les activités de production des ménages relevant des branches 2, 3 et 4 de la CITI seront saisies par échantillonnage au Botswana, au Ghana, au Kenya et au Niger.

Enfin, parmi les vingt-cinq pays qui envisagent de participer au Programme, quinze considèrent que les ressources financières et humaines dont ils disposent sont insuffisantes et qu'ils doivent recourir à une assistance extérieure pour mener à bien les enquêtes prévues.

2. Appui technique de la CEA au Programme

Dans le cadre du Programme, un séminaire de formation en matière de recensement industriel destiné aux pays francophones de la région s'est tenu au début de l'année à Dakar (Sénégal), sous l'égide du Centre de recyclage de Munich pour les statisticiens-économistes des pays en voie de développement, l'ONUDI et la CEA. Consacré essentiellement à l'examen des problèmes de planification, de coordination et de supervision des opérations nationales de recensement, il faisait suite à un séminaire analogue organisé conjointement par les trois institutions en 1982 à l'intention des pays africains anglophones.

En outre, la Division de la statistique de la CEA prévoit la convocation, dans les six prochaines années, de quatre groupes de travail régionaux pour examiner les problèmes relatifs à la collecte des données sur la petite industrie et les industries familiales (1984 et 1989), la mesure de la production industrielle non commercialisée (1984), et l'établissement des statistiques de l'énergie (1987). Toutefois, il convient de souligner que la tenue de ces réunions reste subordonnée à la disponibilité des ressources financières requises.

Par ailleurs, il faudrait rappeler que la CEA a mis au point, en 1982, un projet quadriennal d'assistance technique aux pays de la région qui comportait les volets suivants :

i) établissement de programmes nationaux à moyen et long termes visant à promouvoir le développement des statistiques industrielles;

ii) mise en place de systèmes nationaux intégrés de statistiques industrielles en accordant une attention particulière à la création de bureaux (ou services) centraux des enquêtes industrielles, l'harmonisation des concepts de base, des définitions et des systèmes de classification, l'établissement d'un répertoire central des unités industrielles et la mise sur pied d'une base de données accessible à tous les utilisateurs; et

iii) enfin, mise en oeuvre du Programme mondial de statistiques industrielles de 1983 dans la région.

Malheureusement, la CEA n'a pu trouver jusqu'ici le financement nécessaire pour faire démarrer le projet. Des efforts continuent d'être deployés, toutefois, pour fournir des services consultatifs aux pays de la région en utilisant les

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1/ Au Maroc, l'artisanat sera exclu du champ de recensement.

ressources limitées dont dispose la Commission dans le cadre de son budget régulier. En outre, il y a lieu d'espérer que les pays africains pourront bientôt bénéficier d'une assistance technique complémentaire par le biais du Programme de mise en place de Services de compatabilité nationale, qui a été élargi récemment aux statistiques de l'industrie, des prix, des transports, de l'agriculture, de la distribution et du commerce extérieur. La Banque mondiale a déjà indiqué qu'elle apporterait son concours à la réalisation de ce programme, tandis que le Gouvernement français devrait faire connaître sa position dans les semaines à venir.

Enfin, s'agissant des petites industries, les besoins d'assistance technique des pays de la région peuvent être satisfaits, pour une large part, dans le cadre du Programme africain de mise en place de dispositifs d'enquête auprèsdes ménages dont un des objectifs majeurs est de promouvoir l'amélioration et le développement des statistiques relatives aux entreprises et établissements familiaux.

Conclusions et recommandations

Les pays africains doivent accorder une priorité élevée au Programme mondial de statistiques industrielles de 1983 pour deux raisons essentielles : d'une part, l'élaboration de politiques industrielles, le contrôle des tendances à court terme et l'appréciation de la réaction du secteur industriel face aux politiques établies exigent des informations détaillées et fiables qui font défaut dans la plupart des pays de la région; d'autre part, le Plan d'action de Lagos considère l'industrie comme un domaine prioritaire dans le processus du développement de la région en général et de chaque pays en particulier, et il est essentiel de mettre en place une base statistique appropriée pour évaluer et contrôler le degré de réalisation des principaux objectifs que le Plan a assignés à l'industrialisation.

Les pays désireux de bénéficier d'un concours extérieur pour mener à bien leurs recensements industriels peuvent introduire des requêtes dans ce sens auprès du Programme des Nations Unies pour le développement (PNUD) sur la base des chiffres indicatifs nationaux de planification (CIP), ou auprès d'autres agences de coopération multilatérale ou bilatérale dans la limite des enveloppes financières qui leur ont été allouées. Pour leur part, le Bureau de statistique des Nations Unies et la CEA mettront en oeuvre tous les moyens dont ils disposent pour fournir des services consultatifs adéquats aux pays qui feront appel à leur assistance.

L'assistance extérieure pourrait consister en :

- l'envoi sur place de missions ponctuelles pour aider les pays à formuler et mettre en oeuvre des programmes à moyen et long termes visant au développement des statistiques industrielles;

- la mise à disposition, pour une période de deux ou trois ans, d'un expert qui apporterait son concours technique à l'organisation du recensement industriel et à la mise en place du système national intégré de statistiques industrielles; et

- enfin, l'allocation de ressources financières pour permettre l'organisation et la conduite des opérations sur le terrain (dénombrement en vue de la confection du répertoire, recensement industriel, etc.).

INTEGRATION OF HOUSEHOLD SURVEY PROGRAMMES

Introduction

A primary goal of the National Household Survey Capability Programme (NHSCP) and its African component, AHSCP, is the production of integrated data. Integration in this context means the ability to analyse survey data in the form of a comprehensive account of economic and social conditions and activities as a basis for formulating and implementing a wide range of policy objectives such as improvement in levels of living.

One important aspect of survey data analysis is the examination of inter-relationships between variables. Clearly there is no problem in doing this for variables recorded in the same survey round but it is not so easy to inter-relate data from different rounds.

Existing survey programmes envisage that such relationships will be examined through the use of core questions common to all survey rounds, comparison of aggregated results at the level of penultimate stage area units which remain unchanged for several survey rounds, etc. The arrangements are explained in documents "Survey Data Evaluation and Analysis" (E/CN.14/SM/27) and "Survey Data Analyses" (E/CN.14/SM/39). However, these methods all have disadvantages and core questions in particular may prove a weak means of establishing linkages because of their indirect nature.

It is therefore necessary to consider the possibility of arranging survey programmes in a way that makes it easier to examine the relationships between variables and so improves data integration. In this connection it has to be noted that the programmes so far drawn up under NHSCP/ANHSCP comprise distinct survey rounds which each deal with a separate subject. In some cases additional inquiries have been incorporated in the form of modules and in others the collection of agricultural data occurs sufficiently frequently to be regarded as a kind of core survey. However these arrangements reflect government priorities for data and they have not normally been made with the intention of facilitating an examination of the relationships between variables.

To maximize the linkages, the general aim should be to include in the same survey round all the variables whose inter-relationships need to be examined, but there are two important constraints. Firstly, the linking of data is not the only consideration in organizing survey programmes and undue emphasis on it would result in a set of cumbersome multi-subject surveys. Secondly, data priorities within the usual 4-5 year span of a survey programme cycle will remain an important consideration irrespective of analytical requirements. Decisions on the organization of a survey programme therefore have to take the form of a practicable compromise.

The stage at which a country can introduce more integration in its survey programme depends on how well its survey capability is developed. When household surveys are first introduced, it is obviously necessary to keep all arrangements as simple as possible, otherwise there will be problems

in both data collection and processing. However a little operational experience should soon lead to a situation where the number of topics investigated in the same survey round can be increased to a limited extent. A few African countries have already reached this stage.

Although this note is concerned mainly with the implications of data inter-relationships for the organization of survey programmes, it may also provide some guidance on the procedure for reaching the kind of overall compromise indicated above. After discussing a few more aspects of the relationship between variables, the note goes on to consider the organization of a survey programme in terms of an illustrative example. Other examples can of course be produced in the same way for differing national situations.

Relationship between survey variables

It follows from the introductory comments that there are three ways in which survey data can be inter-related at the household level: internally in any particular survey, core questions to link data from different surveys and use of the same households in different inquiries to enable matching of data. The first of these presents no difficulty and is not considered here.

It is logical to look at the relationships between survey data in terms of explanatory variables which influence those describing actual conditions and behaviour. In the case of households there are two kinds of variables which ought to be useful in this respect:

1. Internal

(a) The number of persons engaged in productive activity, which may not be quite the same as the number of earners, is a fairly strong indicator of the level of household income.

(b) Household size, with adjustment for visitors and absentees, takes into account the dependency ratio when used in conjunction with (a) and helps to indicate per capita income and the general level of living of the household.

(c) Education of individual household members is related to the potential or actual performance of the household in terms of sources of earnings.

2. External

(a) Access to services affects both the social and economic conditions of the household.

(b) The more general question of the environment within which the household operates clearly has a strong influence on its performance and conditions. In urban areas the position depends on industrial, commercial and other possibilities. In rural areas questions of ecology, transport, market outlets, etc.; are predominant.

One other factor which seems important is the diligence of households in making use of their opportunities. However it cannot be readily measured and so is of little use as an explanatory variable.

The variables noted above can all be obtained from community level records or the household enumeration which has to be carried out in the penultimate stage area units. Together with some others, they are the core items which are common to all surveys, so in principle all data can be classified in the ways suggested. However there are two problems.

The first is that some of the variables shown do not provide a straightforward means of classifying households as units. Items 1(c) and 2(a) and (b) are particularly affected in this way. It is therefore necessary to establish simple classifications on the basis of the information recorded.

Secondly an attempt to identify explanatory variables at the outset of survey operations involves an element of guesswork which could lead to the omission of important items. The risk can of course be reduced by extending the list of items but without making it too long.

The core variables can be used to link the results of surveys which are quite widely separated in time, provided the comparisons are not invalidated by other changes which occur in the intervening period. However, as already pointed out, the linkages may not be particularly strong because of the indirect nature of the method.

The only means of directly relating the results at the household level from different surveys is to obtain the data from the same households to enable the matching of records. The constraint in this case is time because contact with the same group of households can be maintained for only a limited period. It means that inquiries whose results are to be inter-related have to be carried out in the same survey round to the extent possible. This is the idea with which the present note is specifically concerned.

Illustrative survey programme

For simplicity, survey arrangements are examined in the context of a single example and it will be appreciated that there can be many variations. The intention of the illustration is to test the desirability of thinking about the construction of survey programmes in terms of the full range of topics that can be investigated, data collection arrangements and data interrelationships. This can be done provided there are no over-riding considerations with respect to data priorities.

The attached example A applies to a country with only one agricultural season in which planting takes place during July-August and the harvest is in November-December. It is assumed that these activities need to be measured every year. The list of survey topics includes all those which have appeared in NHSCP programmes, plus a few others.

Each survey round begins with an enumeration of all households in the last area stage units, at which time information is also collected on community level variables. Then all survey data can be examined in relation to the explanatory core variables already discussed.

In addition the arrangement in the example makes it possible to make a detailed and direct examination of relationships in the following areas:

Income, household enterprises and agriculture;
Demographic variables, education and agriculture;
Labour force, education and agriculture.

This is done by using the same household sample, or parts of it, for all data collection in each survey round. In year 1 it is precisely the same sample that is used for income and expenditure, household enterprises, agriculture and livestock, with a sub-sample for food consumption. The work spills over into year 2 in order to give a complete year's coverage of income and expenditure, with the reservation that these records may have to be maintained only on a simplified basis during the planting and harvesting periods.

Much the same arrangements apply in years 2, 3 and 4, except that the agricultural records are dealt with in sub-sample. This is no disadvantage, bearing in mind that the other inquiries in these years involve only one or two visits to each sample household and are spread over fairly long periods. Arrangements for tropical forest agriculture, with less precise timing of planting and harvesting, would of course be somewhat different. The association of social perspectives with health in year 4 is for convenience rather than any serious analytical intention. The main point for consideration is that topics can be moved around with a proposed programme in order to maximize the possibilities of inter-relating data.

A few rather obvious questions arise from the example. The first is that the programme illustrated looks somewhat overloaded. Only a short time has been provided for drawing the household sample and any necessary sub-samples after the preliminary enumeration and the number of topics covered in each round is greater than usual in the interest of establishing inter-relationships. However it should be noted that the latter is consistent with the practice of adding modules to a core survey, and the overall workload can be reduced by spreading the programme over a longer period, with only the reservation that agriculture has to be investigated at appropriate times of the year. If this requirement can be met, there appears to be no need for survey rounds to coincide with calendar years.

A further consideration relates to the list of topics for investigation which could be arranged in a more convenient manner. Unless rather elaborate information is needed, housing and water supply (for which no provision has been made in example A) can be incorporated in the core data collected at the last area stage. Household enterprises can be put with the income and expenditure records. Livestock data can be treated under the general heading of agriculture on the understanding that arrangements may have to be flexible. Also food consumption and nutrition can be considered together because they are the same kind of inquiry at different levels of intensity (apart from physical measurements used as nutrition indicators which are something different).

Example B of the same illustrative programme, which is also annexed, shows a subject grouping along the lines suggested above and spreads inquiries over a longer period to ease workloads. The investigation of relationships for which the programme provides is shown in the matrix attached and it should be noted that a table of this kind is helpful in deciding which relationships are to be investigated.

The classification of data collection activities according to the kind of sampling arrangement required had been deliberately kept as simple as possible and may obscure some important considerations. For example, in the group of data to be collected from a large sample, it should be remembered that the demographic variables require a large sample than the other topics in the group, while labour force surveys should aim to sample a fairly large number of penultimate stage units and only a few households in each in order to deal with the effect of intra-class correlation.

It is also important that the list of topics to be investigated should not be regarded as in any way fixed. An example is the current interest in finding out more about the extent and effects of personal disability. This particular inquiry needs a very large sample and can conveniently be included in demographic surveys.

Practical limitations on the simultaneous conduct of some inquiries are an additional factor to be taken into account. An obvious defect in this connection is the absence of any attempt in Version B and the corresponding matrix to inter-relate labour force and income and expenditure data; current methodology does not permit the two inquiries to be carried out in the same survey round. Prospects for simplifying the collection of income and expenditure data have been examined in a separate ECA paper. In the meantime it appears that the best means of integrating income and labour data is to include some information on work-content in income and expenditure surveys. Another paper is being prepared on this question.

There are two additional points to be borne in mind. Data processing, which in many countries is a severe bottleneck, must proceed in parallel with data collection for the system of inquiries to be workable. Also the definition of agricultural holders and holdings must be arranged in a way that enables the household to be retained continuously as the unit for statistical investigation.

The final question of interest is how to arrange the data collection activities of field survey organizations in respect of units other than households, which is shown tentatively in example B. The most difficult topic is prices because data should be obtained continuously at various levels. If price data are collected by different field staff from those concerned with household surveys there will be an increase in costs and possible lack of co-ordination, so the idea that enumerators should spend some of their time on this work seems valid. In any case they have to collect price data for imputing the value of domestic produce consumed at home.

Assistance given by field survey organizations in collecting information from industrial establishments does not involve very much work outside urban areas. It is a matter that has to be dealt with by field supervisors rather than enumerators, so the general implication is that additional supervisory staff have to be provided in urban industrial areas.

The movement of agricultural produce and other commodities, and perhaps also passengers, normally requires investigation through a comprehensive traffic survey, which need not inconvenience traffic. The requirement is rather precise benchmark data on supply areas and the markets they serve, expressed in terms of commodity flows. Once the detailed pattern is known, selected indicators should be sufficient for the measurement of changes, except in a situation where there are serious food and other commodity shortages. A benchmark traffic survey would normally occupy one complete survey round.

Data on the centralized storage of agricultural produce can be obtained from administrative records. The more difficult issues is information on stocks held by households. The problem arises because governments pay low prices to farmers, leading to the generation of alternative distribution outlets which may be of an informal nature. If routine surveys have difficulty in providing information on household stocks, more reliance has to be placed on the regular recording of planting and harvesting, bearing in mind that production forecasts are needed more urgently than historical data.

Conclusion

In the light of the foregoing remarks, it can perhaps be said that it is probably useful to look at the organization of survey programmes in the context of a framework comprising the topics to be investigated, broad sampling arrangements, data inter-relationships and the distribution of the work in time. The tendency to consider survey topics in an isolated manner on the basis of assumed priorities is greatly reduced, it becomes easier to examine possible combinations of topics and additional relevant considerations emerge in this process.

No attempt is being made at this stage to produce a detailed paper on the integration of survey programmes because real results come not from a desk study but from practical experience. In the present note attention has been drawn to some of the factors that need to be taken into account. However they are concerned mainly with the central consideration of the note, the inter-relationship of survey variables, and it is appreciated that there are other means of integrating survey data. The most promising line of approach would be for the few countries with good survey experience to experiment with the process of integration in order to produce some more definite guidelines.

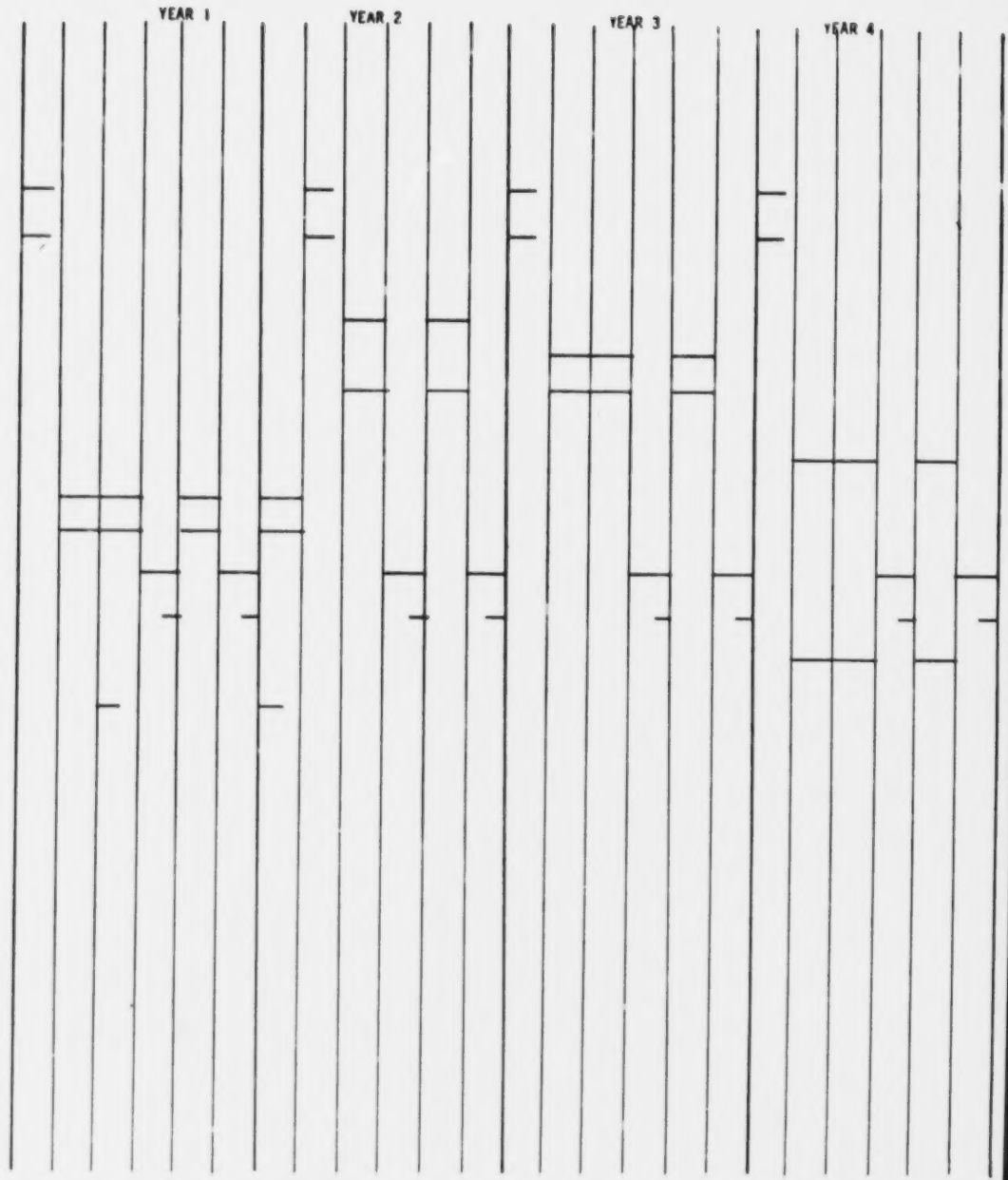
The last of the above comments in no way reduces the responsibility of all countries, including those at a very early stage of survey development, to think about their programmes in terms of an integrated data system. The main issue in this respect is of course data applications.

EXAMPLE A

Data collection by national field survey organizations

Household sample surveys

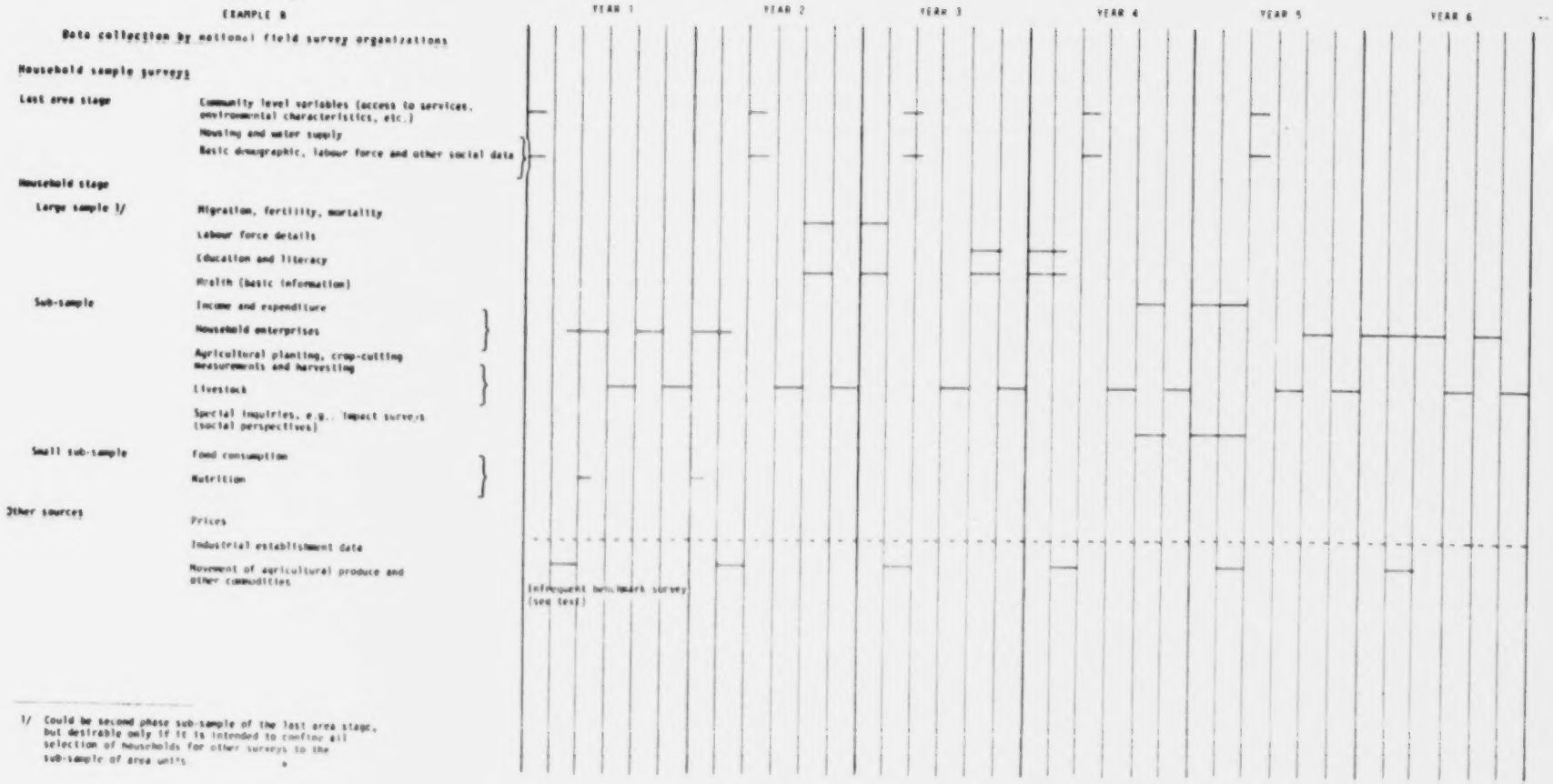
Last area stage	Community level variables (access to services, environmental characteristics, etc.)
	Basic demographic, labour force and other social data
Household stage	
Large sample 1/	Migration, fertility, mortality
	Labour force details
	Education and literacy
	Housing and water supply
	Health (basic information)
Sub-sample	Income and expenditure
	Household enterprises
	Agricultural planting crop-cutting measurements and harvesting
	Livestock
	Special inquiries, e.g., impact surveys (social perspectives)
Small sub-sample	Food consumption
	Nutrition



1/ Could be second phase sub-sample of the last area stage, but desirable only if it is intended to confine all selection of households for other surveys to the sub-sample of area units.

EXAMPLE B

Data collection by national field survey organizations



1/ Could be second phase sub-sample of the last area stage, but desirable only if it is intended to confine all selection of households for other surveys to the sub-sample of area units

EXAMPLE B

Direct inter-relationship of variables from different inquiries

Survey topic	Migration, fertility and mortality	Labour force details	Education and literacy	Health (basic information)	Income and expenditure household enterprises	Agricultural planting crop-cutting measurements and harvesting livestock	Special inquiries eg. impact surveys (social perspectives)	Food consumption, nutrition
Migration, fertility, mortality								
Labour force details								
Education and literacy	X	X						
Health (basic information)								
Income and expenditure household enterprises								
Agricultural planting crop-cutting measurements and harvesting, livestock	X	X		X	X			
Special inquiries eg impact surveys (social perspectives)				X				
Food consumption, nutrition					X			

Note: As this is a symmetrical matrix, only the elements below the diagonal are shown.

INTEGRATION DES PROGRAMMES D'ENQUETES SUR LES MENAGES

Résumé

Ce document décrit une approche systématique à l'organisation des programmes d'enquêtes sur les ménages, qui permet d'examiner de façon détaillée et adéquate les principaux facteurs pratiques et techniques déterminant le choix des thèmes pour chaque série d'enquêtes. Dans ce document, on affirme en particulier que l'ordre de priorité des données ne doit pas être considéré toujours comme l'élément fondamental, car un effort visant à promouvoir les perspectives de combinaison de données pourrait améliorer de façon considérable les résultats du programme dans son ensemble. On propose que l'organisation des programmes d'enquêtes soit considérée dans le cadre d'un contexte comprenant tous les sujets qui pourraient faire l'objet d'une enquête, les aspects généraux des sondages pouvant s'appliquer à chaque sujet, une combinaison éventuelle de données et la distribution à temps du travail. La tendance qui consiste à considérer les sujets d'enquête de façon isolée et sur la base de prétendues priorités s'en trouve donc fortement reduite. Il devient donc plus facile d'examiner les manières dont on peut combiner les sujets et de ce processus émergent des considérations supplémentaires pertinentes.

A cette étape, aucune tentative n'est entreprise en vue de produire un document détaillé sur l'intégration des programmes d'enquêtes, car les résultats concrets ne proviennent pas d'études théoriques mais plutôt d'une expérience pratique. Dans cette étude, on appelle l'attention sur certains facteurs qui doivent être pris en compte. Cependant, ils ont surtout trait au thème central du document, aux rapports entre les variables d'une enquête. On se félicite, par ailleurs, du fait qu'il existe d'autres moyens d'intégrer les données d'enquêtes. L'approche la plus prometteuse pour les quelques pays ayant une bonne expérience des enquêtes serait d'expérimenter le processus d'intégration afin de produire des directives plus précises.

Cette dernière remarque ne diminue en rien la responsabilité de tous les pays, y compris ceux qui sont au tout début de leur expérience en matière d'enquêtes, de considérer leurs programmes en terme de système de données intégré. Le problème principal à cet égard concerne bien sûr les utilisations de données.

HOUSEHOLD INCOME AND EXPENDITURE SURVEYS: THE NEED FOR A MORE COST-EFFECTIVE APPROACH

Introduction

Countries participating in the National Household Survey Capability Programme (NHSCP) and its African component, AHSCP, have already gained some experience in formulating programmes of surveys normally covering periods of about five years. In a few cases it has been possible to foresee longer term requirements.

These programmes all deal with information essential for evaluation, planning, administration and monitoring and their importance has been fully acknowledged. Yet the initiation of the work, although making steady progress, is being achieved more slowly than expected.

To a large extent the delays have been due to organizational and other practical problems relating to individual national projects. Such shortfalls are normal in a new programme and can be greatly reduced when their causes have been studied in a few countries. However cost is also an important consideration, not only in attracting the support of donors, but also in ensuring that governments are able to maintain their survey operations after a limited period of external assistance.

Budgets in respect of the survey programmes already prepared have tried to show realistically the resources needed for the proper conduct of data collection, processing and analysis. The general concept has rightly been that any operation worth performing must be carried out in a manner which ensures successful results. These budgets can add about 30 per cent to the total cost of statistical services with no existing survey capability and allowances for inflation make the figures look high. If the budgets are realistic for the surveys currently envisaged, there remains the question of whether the programmes themselves could be arranged in a technically better and more economical manner.

It would be unwise to attempt too much innovation in the methodology of household surveys at the present time. It is more important to get field operations under way as speedily as possible. Existing methods have been developed through experience and are effective, even though they were designed for surveys carried out in isolation rather than in the context of integrated programmes. New arrangements will also need to be based on extensive field experience if they are to be fully successful.

Future survey programmes are likely to be related more closely to agriculture, particularly as regards food supply surveillance, and the integrated approach will probably lead to the inclusion of several inquiry topics in each of the successive survey rounds. Such changes will emerge gradually as the applications of survey data become more clearly understood, but there is one obvious question that can be examined without delay.

Notably the most costly items in all the national programmes so far formulated are the surveys of household incomes and expenditures. As organized at present, they often require the recruitement of supplementary field staff and a very large bulk of data has to be processed. A more economical approach to these surveys alone would help to reduce the overall cost of survey programmes.

The purpose of the present paper is therefore to look a little more closely at household income and expenditure surveys (IESs), mainly in relation to their objectives, to see whether more cost-effective arrangements are feasible. In doing so it is first necessary to consider the place of these surveys in national programmes.

National survey programmes

At the end of 1981, the topics proposed for investigation by 30 countries participating in NHSCP, during the course of programmes averaging at five years, were as follows:

	Africa	Asia and Pacific	Latin America	West Asia	World total
Income and expenditure	13	6	7	7	30
Agriculture and food production	9	-	1	1	11
Household enterprises	5	5	1	1	12
Employment and labour force	12	6	7	4	29
Energy and environment	3	2	1	-	6
Demographic	13	5	5	4	27
Migration	7	5	3	4	19
Health	9	3	7	3	22
Nutrition and food consumption	10	4	3	3	20
Education	7	2	7	2	18
Housing and water	3	2	5	1	11
Social services conditions	7	4	7	3	21
Total topics	98	44	54	30	226

These topics can be classified conveniently into three groups according to kind of variable:

Economic	Nos: 1, 2, 3	73
Population	4, 6, 7	75
Social	5, 8, 9, 10 11, 12	78
	Total topics	226

Nutrition and food consumption has been included in the social group although it is sometimes investigated in a sub-sample of an IES. Energy and environment is a newly emerging topic and, at the household level, would be concerned mainly with social characteristics.

There are two other general comments which seem important. Firstly the number of inquiry topics concerned specifically with agriculture and food production is surprisingly small, even though it has been said that the first aim of national survey programmes is to cater for the needs of communities dependent mainly on agriculture. This is partly explained by the separate responsibility of ministries of agriculture for these data in some countries. Secondly it is difficult to understand why some of the social topics have to be dealt with in separate investigations when they could be merged to obtain the information more cheaply. However the position is not quite clear as shown in the table because these inquiries often take the form of modules attached to the main survey rounds.

With these reservations, it can be noted that existing survey programmes are divided almost equally between economic, population and social topics. In the economic group a large proportion of the information to be collected relates either comprehensively to household income and expenditure or to selected aspects of it. IES records therefore have a specially important place in survey programmes. In addition it has to be remembered, as already pointed out, that they are more expensive than population and social inquiries. Hence the concern with making them as cost-effective as possible.

Income and expenditure surveys

As noted in connection with the table summarizing survey topics, IESs can deal either with all kinds of household receipts and payments or selectively with transactions relating to particular activities. They are therefore relevant to many kinds of inquiry, ranging from general economic structure and trends, poverty evaluation and weights for price indexes to the performance of particular activities such as agriculture and other household enterprises.

On the basis of this rather broad spectrum of inquiries, the kinds of data produced by IESs can be summarized as follows:

1. General pattern of income and expenditure, including seasonal trends;

2. Agricultural production and costs, including disposal of the produce, bearing in mind production forecasts as a matter of growing future concern;

3. Production and costs of other household enterprises;

4. Socio-economic structure of households ;

5. Remittances, loans and any other special transactions not normally considered in the context of income;

6. Income distribution, including data for taxation policy and analysis of poverty.

The point of interest in this classification is the difference between the kind of survey operation needed to deal with the first five of these items and that required for the sixth. For the former it is sufficient to have a sample of adequate size spread throughout the year and recording periods of not more than one month for each household; the data obtained is of the kind needed in compiling national accounts estimates. The latter requires estimation of the annual income of individual households and at least those in rural areas must be investigated for a minimum of three or four periods in the year when using existing survey procedures. The same problem does not apply to many urban households which derive regular incomes mainly from wages and salaries and are less affected by seasonal variations.

There is a large difference in cost between these two kinds of surveys. Those which investigate items 1 - 5 can be made reasonably economical through frequent sample changes which enable more households to be covered with given resources. In the case of item 6 a higher survey cost is normally inescapable.

This difference has been acknowledged by the Indian National Sample Survey which deliberately minimizes IES costs by collecting data for a month only from each sampled household through a single visit. Income distribution is of secondary importance in these surveys. On the other hand, most African IESs being conducted or planned at the present time place considerable emphasis on income distribution data and this is why they are the most costly components of survey programmes.

It can be argued that, because of the need to investigate poverty and other problems related to income structure, survey programmes should regularly produce data on income distribution. This is a policy issue which needs separate consideration. The present paper only has to note the cost implications. However there are other factors which affect costs and they will be outlined in the next section which discusses prospects for more economical IESs.

Options for reducing costs

There are basically three options available for making IESs more cost-effective: improvement of survey design, more selectivity with respect to survey objectives and an innovative approach. They are examined in separate sub-sections below.

Improvement of survey design

In a situation where the reduction of poverty must be a primary aim of planning and where the scale of household farming operations is relevant to productive efficiency, many national statistical services feel it wiser, or at least safer, to keep income distribution firmly in view in their survey programmes.

In surveys which deal with income distribution data, i.e. which obtain data on individual households more or less continuously for a complete year, the main requirement is to incorporate features which improve efficiency. Most of them are fairly well known and they are listed with comments below:

1. The ultimate stage sample of households can be made more effective for a given sample size by dividing it into income strata with variable sampling fractions. The arrangement is discussed in a separate ECA paper which also proposes means of obtaining the necessary income estimates and defining the strata;

2. The workload in field recording of data and subsequent processing can be considerably reduced by using sub-samples to deal with expenditure details through frequent visits. These serve to amplify and calibrate more aggregative expenditure data recorded less frequently for the whole sample;

3. Instead of following individual households continuously throughout the year, recording can be arranged so that each household is under investigation for, say, one month in each quarter of the year. In this way more households are included in the sample with no additional resources and the problem of respondent fatigue is reduced. Further information on this question is given in Annex I;

4. The amount of material which has to be computerized can be significantly reduced by incorporating some of the summary work in the questionnaire design. In doing this it is necessary to ensure that essential information is not lost, but details of individual transactions, e.g. single purchases are almost never needed for processing and analysis. Summaries at the questionnaire level are in any case necessary to enable the execution of item 5 below;

5. Summaries of the overall sample results for income and expenditure should be prepared manually at regular, probably monthly, intervals to check on the performance or the survey. The procedure not only enables recording errors to be identified and corrected quickly but can also deal with many aspects of seasonal analysis.

The use of 1 - 3 above involves a fairly sophisticated survey design which must be applied with precision. As a simpler alternative, countries are opting for survey arrangements which are less cost-effective. There can be little sympathy with this solution. If income distribution data really do have to be incorporated in most household economic surveys, it is necessary to organize the job properly.

Item 4 reflects the existing dichotomy between data collection and processing. Statisticians have not kept themselves fully aware of new developments in computerized data processing and have become excessively reliant on the people who operate the equipment, with the result that there are data processing bottlenecks and an uneven flow of work. This problem can be solved only by the statisticians themselves who must understand clearly what a computer can and cannot be asked to do in a given period of time. Some preliminary manual work, particularly in HESs, can ensure that survey results become available much more quickly. However the basic requirement is a much closer working arrangement in all aspects of data collection, processing and analysis, with much less reliance than at present on computer personnel.

The position regarding item 5 is difficult to understand. Many countries allow a survey data collection operation to run for a whole year without trying to take an intermediate look at the viability of the data. Such a risk is totally unnecessary. In any kind of survey where data collection lasts for more than a month, there should be regular summaries to check on the performance of the sample itself and the recording arrangements. Field scrutiny and manual and computerized editing alone are not sufficient for this purpose. Curiority ought to prompt the necessary action, let alone the cost of mistakes which are allowed to persist for too long.

Selectivity in survey objectives

As already noted, the sources of household income, patterns of expenditure, production, seasonal changes, etc. can all be investigated quite happily through samples changed at frequent intervals, provided data on income distribution do not have to be collected at the same time. A fairly large number of households can then be examined at moderate cost. In spite of the reservations already acknowledged, it therefore appears that statisticians ought to be more selective in determining survey objectives.

For macro-economic policy it is an advantage to consult a complete picture of the national household income distribution, but it must be asked whether such a luxury is really necessary. In the case of action to alleviate poverty it is usually possible to identify population sectors of special interest and, for inquiries such as farm costs in relation to output, sufficient data can be obtained through sub-samples.

In the light of these considerations the position becomes clearer. Costs of all kinds of IES-type surveys can be reduced significantly if income distribution inquiries can be regarded as a separate special exercise.

Survey arrangements also have to be considered in the economic and social context of developing countries. Some of those in Africa have economic problems which make currency values difficult to interpret, so surveys involving transmitions records have to be organized with special care. It also has to be borne in mind, where communal productive activity is important, there are units in addition to households which have to be investigated in much the same way as enterprises. In addition, as pointed out earlier in this paper, the survey programmes in many countries will face gradual adaptation to accommodate agricultural production forecasts and food supply data.

Bearing in mind all considerations of the kinds mentioned above, there is a clear indication that household economic surveys will have to become a flexible investigative tool. The present tendency to treat them in a stereotyped manner will disappear when their objectives are more carefully considered.

Innovative approach to income assessment

The present method of assessing individual household incomes, at least in rural areas, relies on records of receipts which are compiled over a considerable period of time and then aggregated. The process is cumbersome and expensive.

This leads to the question of whether it may be possible to develop a systematic and intensive interview procedure which would provide a reasonably accurate indication of a household's income structure and level. ECA attempted to do so in 1977 and the details are given in document E/CN.14/CAS.10/18.

The method begins with the usual listing of household members, paying particular attention to the employement or productive activity of each person and to joint enterprises of the household members. From this starting point the questioning then works systematically through the details of employment, farming activity and other production in order to compile not only estimates of income, production costs, etc., but also an account of relevant physical characteristics such as number and sizes of plots and the crops they grow. In addition the method can be used to a limited extent for crop forecasting.

The 1977 proposal was concerned with countries comprising groups of islands or with very limited statistical resources where only a single visit to each household would be practicable. The proposal has not so far been field tested.

In a more general application, interviewing would not be confined to a single visit and the collection of income and related data would probably be incorporated in surveys where the entire sample of households is replaced at monthly intervals. This would lead to greater economies than any of the improvements mentioned above and, if successful, would provide much the same information as traditional IESs, plus a probably better account of household economic and social structure and activities.

However no conclusion can be reached on this or any other kind of innovative methodology until field tests have been undertaken. Testing the basic approach would not be expensive but it might cost a little more to develop the procedure with adaptations to meet various kinds of data requirements.

It must be added that NHSCP/AHSCP provides a remarkably good opportunity for developing new survey methods. While it is appreciated that the immediate aim must be to get national survey programmes started without delay, full use must be made of the opportunity to innovate.

Conclusions

The purpose of the present paper is to promote thought about the means of keeping survey programmes within reasonable limits of cost, bearing in mind that they will be an item of recurrent expenditure for governments in the future. Household income and expenditure surveys (IESs) have been singled out for consideration because they are the most expensive items in current survey programmes. The main conclusions are as follows:

1. The principal reason for the high cost of IESs is the emphasis placed on income distribution data;

2. Even in surveys where income distribution is an essential data requirement, a more cost-effective approach can be achieved by incorporating the features which have been described. However, these features lead to a more complicated survey design which has to be applied with considerable care ;

3. In any case, there are requirements such as regular summaries of results in surveys spread over long periods and better organization of computerized data processing which must be met if survey programmes are to be effective ;

4. There should be greater selectivity in determining survey objectives. In IESs this would help to place the priority needed for income distribution data in proper perspective and enable such surveys to become a more flexible tool for investigating other topics such as agriculture and household industries ;

5. In view of the cost saving that might be achieved, an earlier FCA proposal for an alternative means of estimating household income ought to be tested in field experiments;

6. While the immediate aim must be to initiate national survey programmes as speedily as possible, full use should be made of the opportunity for methodological innovation provided by NHSCP;

7. Survey programmes must be responsive to new data needs that emerge in a changing economic and social situation and some of these needs are already evident, particularly in the field of agriculture;

Some of the points made in this paper regarding flexibility, responsiveness, etc. only repeat what has already been said in the NHSCP Prospectus and other documentation but here they are placed in the more specific context of action to improve IESs. There are certainly some real possibilities in this connection.

ANNEX I

PERIODICITY OF INTERVIEWS IN HOUSEHOLD INCOME AND EXPENDITURE SURVEYS

The following table has been prepared from two international publications* containing summary technical details of income-expenditure surveys conducted by individual countries in recent years by the interview method:

Periodicity of interview in terms of months	Number of countries
a. Each sampled household is interviewed during one month of the survey year	12
b. Each sampled household is interviewed during 2 to 6 months of the survey year	5
c. Each sampled household is interviewed during all the months of the survey year	3
	20

It shows that in a majority of countries individual households are interviewed during one month only though the survey is spread over one year. This is generally achieved by dividing the total sample into 12 sub-samples, each sub-sample being assigned to a month for interview. In other countries, the sample is rotated in such a way that each sampled household is interviewed at periodical intervals during the survey year. Within the month of interview, the frequency of visits to individual households and the reference period for collecting data on different items of income and expenditure vary a great deal according to survey design.

The following is a further breakdown of the same information showing the countries using the different approaches.

	Number of countries	Name of countries
1. Each sampled household is visited during one month in a year	12	Portugal, Singapore, Yugoslavia, Brazil, Colombia, India, Indonesia, Kuwait, Sri Lanka, Swaziland, Thailand, Tunisia
2. Each sampled household is visited during two months in a year	1	Cuba
3. Each sampled household is visited during three months in a year	1	Chile

* 1. Sample surveys of current interest - 14th report - United Nations Statistical Office.

2. Income and expenditure surveys in developing countries - sample design and execution - Living Standards Measurement Study - World Bank.

4.	Each sampled household is visited during four months in a year	2	Bangladesh, Pakistan
5.	Each sampled household is visited six months in a year	1	Tanzania
6.	Each sampled household is visited during all the 12 months in a year	3	Botswana, Kenya, Sudan

ENQUETES SUR LES REVENUS DES MENAGES ET SUR LES DEPENSES : BESOIN D'UNE APPROCHE PLUS RENTABLE

Résumé

L'objectif du présent numéro est de promouvoir la réflexion sur les moyens de maintenir les programmes d'enquêtes dans des limites raisonnables de coût, tout en se rappelant que ces programmes représenteront à l'avenir des dépenses renouvelables pour les gouvernements. On a choisi d'examiner de plus près les enquêtes sur les revenus et les dépenses des ménages (IESs) parce qu'elles constituent l'élément le plus coûteux des programmes d'enquêtes ordinaires. Les conclusions principales sont :

1. Les coûts élevés de ces enquêtes sont dus essentiellement à l'accent mis sur les données relatives à la distribution des revenus.

2. Même lorsqu'il s'agit d'enquêtes dans lesquelles la distribution des revenus est une donnée essentielle, on peut trouver une approche plus rentable en incorporant les caractéristiques déjà décrites. Toutefois, ces caractéristiques mènent à une conception des enquêtes plus compliquée qui doit être appliquée avec beaucoup de précautions.

3. Dans tous les cas, des résumés périodiques des résultats d'enquêtes de longue durée et une meilleure organisation du traitement informatisé des données sont un besoin auquel il faut répondre si l'on veut que les programmes d'enquêtes soient efficaces.

4. La sélection des objectifs des enquêtes devrait être plus rigoureuse. Ceci permettrait de trouver dans les IESs une juste priorité en matière de distribution des revenus et de transformer ces enquêtes en des instruments plus flexibles pour mener des enquêtes dans d'autres domaines tels que l'agriculture et l'électroménager.

5. Avec la perspective des économies qui pourraient être réalisées, on devrait essayer d'appliquer une ancienne proposition de la CEA préconisant d'autres manières d'évaluer les revenus des ménages.

6. Si l'objectif immédiat doit être de commencer le plus tôt possible les programmes d'enquêtes nationales, on devrait tirer plein profit des possibilités d'innovation méthodologique offertes par le Programme de mise en place de dispositifs nationaux d'enquêtes sur les ménages.

7. Les programmes d'enquêtes doivent être sensibles aux nouveaux besoins en matière de données et qui émergent dans une situation économique et sociale changeante. Certains de ces besoins sont déjà évidents, surtout dans le domaine de l'agriculture.

INCOME STRATIFICATION OF HOUSEHOLD SAMPLES

Introduction

This paper examines one particular aspect of household survey design: the use of income strata at the ultimate stage of samples to improve efficiency. The arrangement is applicable to household income and expenditure surveys and also to others, such as those concerned with household agricultural and other production, where income is closely related to the variables under investigation. Stratification to deal with skew income distributions normally has to be carried out at the ultimate stage because households with homogeneous income characteristics are not clustered geographically.

Nevertheless it should be understood that the paper is not directly concerned with the collection of data on income, production, etc. This topic is dealt with in a separate paper which discusses the means of obtaining such data as economically as possible.

Ultimate stage stratification according to income level is intended to enable investigation of a larger proportion of the relatively few higher income households. However problems have been experienced in using the method under African conditions, mainly due to difficulties in applying somewhat complicated procedures. As a result, countries are now tending to conduct income and expenditure surveys without using income strata, which wastes scarce survey resources.

In this paper an attempt is made to discuss some of the options available for establishing income strata. The object is to clarify procedures and to urge the use of the simplest methods likely to prove effective. The ultimate choice of methods of course has to be made in the light of local conditions.

Procedures for creating strata

In creating strata, optimality is probably the first consideration. It has been said that the numbers of households selected in each stratum should be proportional to the within-strata variances of the variable under investigation. This would optimize the estimate of a mean or total.

However the situation is not so simple. Many variables are under investigation in any given survey and the aim is not just to estimate means and totals but to look at economic structures and associated social characteristics in terms of distributions, inter-relationships, etc. In addition it is not usual to have any detailed knowledge of variances before conducting a survey.

Optimality is therefore a complex and largely illusory concept. In this paper the view is taken that the approach to strata creation must be very simple and practical. What is needed is a means of organizing a sample in parts which are of equal importance according to some characteristic such as income, so that each part can be examined with equal intensity. This and some of the other possible methods are compared in a numerical example in Annex I.

The broad requirement in the light of the concept proposed here is the creation of, say, three income strata which each account for one third of aggregate household income. Equal numbers of households are then selected for the recording of income, expenditure, etc. from each of the three strata. Success of the arrangement is dependent on obtaining a reasonably reliable indication of household income during the preliminary enumeration at the penultimate stage. The method implies the use of fixed strata limits defined by level of income. It should also be understood that the arrangements considered in this paper relate to self-weighting samples which are necessary when regular summaries of results have to be made manually.

In order to determine the strata limits and select the ultimate stage sample it is first necessary to carry out a brief but comprehensive analysis of the penultimate stage enumeration. Ideally this should be done by bringing all records and senior field staff to a convenient central place, normally the statistical headquarters. The work then takes the form of a quick manual operation by the staff responsible for data collection, comprising the compilation of tables showing income in relation to other important variables. The analysis is intended not only for the calculation of strata limits but also to give some idea of how the ultimate stage sample will perform. There is a better chance of spotting peculiarities and problems when the enumeration results are viewed on an overall basis. In addition there is the advantage of ensuring that field supervisory staff have a proper understanding of the preliminary enumeration results and the organization of the ultimate stage sample.

It has been said that the cost of collecting data at the penultimate stage could outweigh the variance reduction achieved by the stratification. This is not true because households normally have to be enumerated at the penultimate stage to enable selection of the ultimate stage sample. A very simple questionnaire could be used for this purpose to reduce costs but is not employed because the enumeration is becoming increasingly regarded as a data source in its own right. The only additional cost is therefore that of asking questions on income. It is also relevant to note here that the time lag between the enumeration and selection of the ultimate stage sample must be very short, which also helps to keep costs down.

However the centralized method of determining fixed strata limits has two important disadvantages. The first is that, in countries with transport difficulties, it is not easy to bring the survey supervisors and their records to the central statistical office at a pre-arranged time and a delay with respect to any one region can retard the progress of the entire survey. To some extent this problem can be overcome by performing the analysis at regional level and forwarding only the summary tables to the central office. Nevertheless there remains the difficulty that all results have to be consolidated before strata limits can be decided and a decentralized operation is much less useful in training the field supervisors.

The second problem relates to differences in income distribution between the various parts of a country. If these are significant there may be some areas where the number of households in the higher income stratum is too small to produce the sample size required at the ultimate stage. The problem usually affects only a few penultimate stage units but there is no way of avoiding it when strata limits are fixed in terms of income levels. At the same time it should be noted that the method, if properly organized, does not lead to unreasonable variation in enumerators' workloads.

Some concern has been expressed about the possibility of non-response affecting the stratification but willingness to give data is not normally a problem in developing countries. Bias, which often affects the answers to income questions, is a more significant consideration. A systematic bias over the whole income range may have little effect on the placing of households in strata. If higher income households overstate, or the poorer ones understate, there will be some effect on the calculation of strata limits, but not on the placing of households in relation to one another. The only real difficulty arises when higher income households understate their incomes or the poorer ones overstate, which could lead to a misallocation of households to strata. Any serious difficulty likely to arise from bias should be spotted during the analysis discussed above.

A number of African surveys have successfully used income strata with fixed limits but there has been a tendency to make mistakes in applying the method. Such mistakes have arisen mainly from lack of proper documentation on how samples have been drawn and failure to take into account the differences between estimated and enumerated populations in sample selections with probabilities proportional to size. These problems have to be eliminated and it would also be desirable to reduce the practical difficulties noted above.

It is tempting to suggest that strata limits should be fixed before the survey, either on the basis of information already available, or through a pilot inquiry. All the work relating to sample selection could then be decentralized. However a little reflection is sufficient to indicate that the arrangement would have little prospect of success in an inflationary situation which can affect various classes of people in different ways. Any data used for predetermining strata limits in terms of income levels must clearly be very recent and only the penultimate stage enumeration can really claim to fulfil this requirement.

An alternative approach is of course to base the strata on percentile groups. In this case the division between lower-, middle-and higher-income households would normally have to be predetermined on a more arbitrary basis and could be envisaged in the proportions 50:30:20 or some variation appropriate to local conditions. Regions would then simply be requested to classify the household enumeration records for each penultimate stage unit (enumeration area or segment) into these three groups.

In this situation the selection of the ultimate stage sample is much easier because the enitre procedure can be decentralized. As in the case of fixed-limit strata, any substitutions that may be needed in the ultimate stage sample have to be arranged prior to budget or other recording but these changes can be supervised at regional level.

The attraction of the method described in the last two paragraphs is simplicity. In addition to avoiding a central review of the preliminary enumeration results, it removes the "empty cell" problem and the selection procedure is simple enough to be supervised by regional offices without special guidance. However simplicity does have to be paid for in terms of a number of clear disadvantages.

Probably the most important of these is reduction of control over the survey operation; periodic regional visits are not a good substitute for the precise central processing and briefing which has featured in some of the surveys using fixed limit strata. Decentralization could also have other adverse effects such as reduced understanding in the regions of the need to maintain regular summaries of survey results for quality control purposes and analysis of seasonal variations.

There are also technical disadvantages. The stratification will be inefficient to the extent that the three percentile groups do not cover equal amounts of total income. It is also likely that the strata will cover rather different ranges of income in different parts of the survey area, although this could improve regional estimates. However, bearing in mind that the aim is a rough although arithmetically precise means of creating strata, it may be reasonable to assume that the technical disadvantages are less important than the practical ones mentioned in the last paragraph above. In any case it should be noted that the use of percentile groups in no way precludes the arrangement of ultimate stage results in precisely stated income classes.

As indicated in paragraph 7, there are other methods of creating strata at the ultimate stage of self-weighting samples. Perhaps the simplest of all would be to apply the "strata of equal importance" concept in a sample with equal probability selection at all stages because this would greatly reduce the possibility of errors. However the method is applicable only when the penultimate stage frame can be adjusted to give units of reasonably constant size; otherwise there is too much variation in enumerators' workloads. The two approaches discussed above appear to be adequate in drawing attention to most of the relevant considerations.

Sample design and strata weights

For the sake of completeness the arrangements for fixed limit and percentile group strata are now briefly examined in the context of a self-weighting sample design. It is assumed that there will be two area stages for which probabilities proportional to size are used in selecting units. The stages/units to be considered are: district (d), segment (s) and household (h). The regions, i.e. groups of districts mentioned earlier in this paper are not taken into account because they are relevant to the sample only for administrative purposes. Also not considered is any first stage stratification that might be incorporated on the basis of ecological zones, etc.

For both fixed limit and percentile group stratification the requirement already indicated is to have equal numbers of sampled households in each of the three utlimate stage strata, which themselves cover equal amounts of total household income. Then for both methods the selection probabilities at each stage are as follows:

1. Any one of n_d districts to be included in the sample (PPS): $n_d h_d/H$ (where h_d is the estimated number of households in the selected district and H is the estimated number of households covered by the survey, i.e. the sum of h_d).

2. Any segment in selected district (PPS): h_s/h_d (where h_s is the estimated number of households in the selected segment).

3. Any household in each of the three strata in selected segment (EP):

$$n_h/3p_i \times 1/h'_s \times h_s/h_s = n_h/3p_i h_s \quad (i = 1, 2, 3)$$

(where $n_h/3$ is the average number of households to be selected from each stratum in each segment, p_i are the proportions of households in the three strata in selected second stage segments as a whole, h'_s is the number of households enumerated in the selected segment and h'_s/h_s is an adjustment to allow for the difference between the estimated and enumerated numbers of households in the selected segment).

Then the overall selection probability for any household in each of the three strata is $n_d n_h/3Hp_i$ and the households in each stratum are therefore treated equally, so that the sample is self-weighting at the stratum level.

It is not the purpose of the present paper to discuss the organization of the sample described above or its many variants but it should be noted that there are a few key questions which have to be answered in the light of design considerations and resources available. They are the number of districts to be included (n_d), the number of segments to be selected in each district and the average number of households to be examined in each selected segment (n_h). For most purposes it is better to have an arrangement which spreads the sample as widely as possible but costs in general and transport difficulties in particular normally mean that some reduction in desirable sampling efficiency has to be accepted.

It should further be noted that the sample described above envisages the selection of only one segment in each district. Two would perhaps be better, particularly for the calculation of variances, but may not be practicable with available survey resources. The number of households investigated in each segment is usually in the range 12 - 18 for income and expenditure surveys but may be higher for other kinds of inquiry. It is determined to a large extent on the basis of feasible enumerators' workloads, which often leads to more households than optimal being investigated in each segment.

In connection with the geographical spread of samples it should be mentioned that a few African countries are approaching the position where either the first district sampling stage can be eliminated or all districts can be included. This reflects a considerable improvement in their survey capabilities and is usually associated with a demand for data for local planning purposes.

The more direct concern of the present paper is how the fixed limit and percentile group ultimate stage strata perform in the context of the sample described or its variants. Advantages and disadvantages of the two methods have already been considered in general terms, with percentile groups scoring lower in efficiency, at least with respect to the overall survey estimates. The point to be noted here is that the values of p_i, the distribution of

households between strata, are known at the outset when percentile groups are used but they can be obtained only from a central consolidation of second stage enumeration results in the case of fixed strata limits, with the mild reservation that the fixed limits could be predetermined if good recent data were available. This is why samples using percentile groups can be organized in a decentralized manner, although with some loss of supervision.

Finally, there is the question of strata weights. The third stage selection probabilities multiplied by the numbers of households enumerated in the three strata in individual segments indicate the numbers of households to be drawn for the final stage of the sample. Data obtained from these households are directly additive within strata, but weights are necessary when amalgamating the strata results. The strata weights are the same for all geographical areas covered by the survey unless adjustments have to be made for missing households. Such adjustments can be avoided within reason by inserting imputed data.

For a sample which is divided equally between strata, the weights are simply the proportion of households in each stratum multiplied by the number of strata, i.e. $3p_i$ in the illustration given above. This arrangement is suggested because, when applied to the survey results for each stratum, the weights produce figures of the same magnitude as those which would be obtained less accurately from an unstratified sample with the same number of households. Data for the three strata can then be added. The advantage of the arrangement is that there is no manual processing problem arising from any large change in the order of magnitude of the figures. When the data have been amalgamated, they can of course be raised easily to the level of national estimates where necessary, but most of the results are more useful and manageable if presented as household averages.

Assessment of household income

To create the three strata discussed in this paper it is necessary to assess household incomes when enumerating them at the penultimate stage. The assessment can take the form of a direct request for information on income or a set of substitute indicators which attempt to fulfil the same purpose.

Although large operations such as population censuses normally avoid questions on income, such questions are necessary for the creation of strata in household surveys. The arrangement involves individual records of the declared income of employees and self-employed persons plus a statement for the household as a whole of sales of farm and other produce during a specified reference period which is usually the past year. Thus the questions have concentrated on measuring cash income.

In fact there has been no great difficulty in obtaining replies to these questions, although there has been a continuing danger of biased answers. In urban areas, strata corresponding to the actual income distribution have been established without trouble. In rural areas the results have been less satisfactory due to the omission of subsistence consumption. Consumption of own produce is predominant in the lower income group and its exclusion from the income assessment, when attempting to allocate equal shares of total income to each stratum, leads to an unduly large number of households in the lower income group.

It is tempting to conclude that the rural problem can be overcome by estimating total household agricultural and other production rather than sales. It also has to be noted that the difficulty would be much less apparent when strata are based on percentile groups. However it has to be borne in mind that total output is a less tangible item of information than cash receipts for collection during a single short interview and cash income is not necessarily closely related to total income in rural areas.

It is therefore desirable to consider the use of alternative indicators. These are examined in some detail in the UN Statistical Office document Series M, No. 61 which deals with household income, consumption and accumulation. The classification of individual household members given in Table III.1 of the document summarizes as follows:

Major group	Group and sub-group
1. Employers in agriculture	11. Employers in agriculture (one or more employees in addition to family workers)
	111. Mainly owning the land they cultivate
	112. Mainly renting the land they cultivate
2. Own-account workers and members of producers' co-operatives in agriculture	21. Own-account workers (no employees except family workers)
	211. Mainly owning the land they cultivate
	212. Mainly renting the land they cultivate
	22. Members of agricultural producers' co-operatives
3. Employers outside agriculture	31. Employers outside agriculture (at least one employee not including family workers)
	311. Modern sector
	312. Traditional sector
4. Own-account workers outside agriculture	41. Professional, technical, consulting and similar fields
	42. Other own-account workers and members of producers' co-operatives (no employees except family workers)

5. Employees in agriculture	51. Employees in agriculture
6. Employees outside agriculture	61. Managers and supervisors
	62. Professional and technical
	63. Clerical, sales and service workers
	64. Manual workers
	65. Members of the armed forces
	651. Officers
	652. Others
7. Economically inactive persons living in households	71. Living mainly from social security benefits
	72. Living mainly from private pensions, annuities or property income
	73. Living mainly from other transfers of income
	74. Students
8. Persons living in institutions	81. Persons living in institutions.

To use such a classification as a basis for establishing strata at the household level it has to be simple enough for recording during the penultimate stage enumeration and should also incorporate a rough indication of the levels of individual incomes. ECA has given some thought to the matter and tentatively proposes the following:

Activity classification

	Weight
1. Employers	
11. With 1 to 9 employees	4
12. With 10 to 49 employees	6
13. With 50 or more employees	8
2. Own account workers	
21. Professionals	4
22. Farmers, livestock operators, fishermen, hunters	2
23. Traders, craftsmen, service and transport operators	2
24. Others	2
3. Members of producers' co-operatives	2

		Weight
4.	Employees	
41.	Administrative, managerial, professional, technical and related workers	3
42.	Clerical, sales, service and related workers	2
43.	Agriculture, animal husbandry and forestry workers, fishermen and hunters	1
44.	Production and related workers, transport equipment operators and labourers	
441.	Skilled	2
442.	Unskilled	1
45.	Others	1
5.	Unpaid household workers	0
6.	Persons not working	
61.	With income from property, pension, remittances, etc.	1
62.	Without income	0

The simplified classification tries to arrange all the household members by broad lines of individual income, as judged by their employment status and occupational category approximately on a comparative basis by the weights in the last column. At the present stage it is of course difficult to say how well a classification of the kind described here would perform for stratification purposes but it is at least possible to mention some of the relevant considerations.

The first of these is the effect of number of incomes on total household income. In the following table some figures are reproduced from the urban part of a Sudan survey:

Distribution of household income by number of earners

Number of earners	Average household income (Sud £ p.a.)
0	943
1	1 238
2	1 718
3	1 766
4	3 049
5	3 328
6 and over	3 687
Total	1 503

Data on number of households by number of earners are not available but it is clear that there is a strong relationship between number of incomes and total household income. If this is a general characteristic of households, there is some justification for thinking that information on number of incomes and their approximate levels, along the lines suggested in the classification, can provide a reliable basis for creating strata.

Another consideration is the relation between household size and income. A table on this topic comes from urban Nigeria:

Distribution of households by average monthly household income and by size of household

House-hold size	Average monthly household income (N) 0-99	100-199	200-299	300-499	500+	Total	Per capita income
1	10.79	6.02	1.07	0.48	0.12	18.48	107
2	7.51	4.53	0.53	0.24	-	12.81	50
3	7.15	3.58	0.89	0.12	0.30	12.04	37
4	6.50	4.83	0.89	0.83	0.18	13.23	32
5	4.11	4.35	1.61	1.07	0.42	11.56	35
6	3.52	3.57	1.49	0.71	0.48	9.77	28
7	2.38	1.91	1.13	0.48	0.24	6.14	24
8	0.95	1.79	0.95	0.66	0.24	4.59	27
9	0.66	1.13	0.66	0.71	0.24	3.40	26
10+	1.31	2.20	1.79	1.37	1.31	7.98	23
Total	44.88	33.91	11.01	6.67	3.53	100.00	33

The correlation between the two variables in this table is only about 0.4 and there is no related information on number of incomes. The figures suggest that household size is not a variable to be taken into account when considering income strata. However the last column added by ECA does illustrate a point of interest: smaller households have higher per capita incomes, presumably because they have lower dependency ratios.

From the above brief examination for which no rural supporting data could be found, it is concluded that an activity classification of the kind proposed above can be used in stratifying households broadly according to level of income but that the results may not be as satisfactory as those based on quantitative income data if the latter are available. In particular there will be the problem of very high or low individual incomes, not recognized in the activity classification, which will place some households in inappropriate strata and reduce the efficiency of the ultimate stage sample. Finally it should be said that the classification itself and the weights allocated to its various items should be examined and revised as necessary by individual countries in the light of existing survey results and other material.

Method of recording

The essential consideration is that, irrespective of whether household strata are based on quantitative income information or economic activity indicators, the data have to be compiled during the penultimate stage enumeration of households which comprises a census-type listing of individual persons. Recording arrangements therefore have to be very simple.

In the quantitative approach, as already indicated, the items of information are the incomes of individual household members where appropriate, plus an assessment of the total agricultural and other output of household enterprises.

For a classification of households based on the characteristics of household members the records need to follow, to the possible extent, the arrangements suggested above. Two columns in the enumeration form would suffice to provide the necessary information. The first would show the economic activity codes and the corresponding income weights would be entered in the second.

In the light of the foregoing comments the items of information that need to be recorded during the preliminary enumeration, covering both indicators and a quantitative assessment of income, 1/ are as follows:

Individual persons

1. Serial number
2. Name
3. Whether normally present
4. Relationship to head of household
5. Sex
6. Age
7. Level of education
8. Occupation
9. Economic activity: code
10. Economic activity: income weight
11. Income

Household as a whole

12. Estimated quantity and value of household agricultural and other produce during the past year.

In an arrangement along the above lines, column 3 would be applicable in surveys where it is not intended to visit households over long periods and which require something approaching a de jure definition of household membership. For surveys with visits over a long period a de facto definition with the figures frequently up-dated would be more appropriate.

It is unlikely that any survey would attempt to gather data for stratification on the basis of both indicators and a quantitative assessment. When indicators alone are used, there is no need to include items 11 and 12. In the case of a quantitative assessment, item 10 can be omitted but item 9 may

1/ It should be noted that a number of additional core questions, to provide continuing data on important topics or to assist in inter-linking the results of different surveys would also be included.

still be useful. In connection with item 12 it should be noted that there is a need for field experience because previous surveys have collected data only on sales of agricultural and other household produce.

One further point relates to small household trading enterprises which are frequent in Africa. Persons engaged in these activities should be regarded as own-account workers outside agriculture and, when a quantitative assessment is made, their estimated income should be a net figure without reference to turnover.

The income weights recorded under item 10 are of course additive to give a consolidated indicator for the household as a whole. Again it must be emphasized that field experience is required to evaluate the usefulness of the method.

The above considerations are incorporated in two tentative enumeration forms which are given in Annex II to this paper.

Concluding comment

This paper has drawn on existing material of ECA and the UN Statistical Office in an effort to clarify the use of ultimate stage income strata in household income and expenditure surveys and other inquiries where the variables investigated are related to income. Its basic conclusion is that such strata should be employed in order to utilize scarce survey resources as economically as possible. With regard to sample design the paper is more in favour of percentile groups for the creation of strata than has been the case in previous ECA proposals but these groups are not considered desirable for the presentation of survey results or for analysis. For the preliminary assessment of household income in creating strata the paper continues to support the original ECA idea that quantitative information is the best approach but agrees that indicators are a viable alternative. All the topics discussed in the paper and the conclusions reached need further examination on the basis of actual survey data.

ANNEX II

Numerical examples of stratification

The following examples are based on the results of the Sudan Income and Expenditure Survey (1967-68) which covered all types of households among the settled population of the six Northern Provinces. The total (i.e., the six Northern Provinces) were stratified by urban, semi-urban and rural.

In the computations, four different methods of determining stratum boundaries have been used:

(I) Cum $\sqrt{f}$

(II) Equal share of total income

(III) Equal share of households

(IV) Percentiles (50:30:20)

The calculations are shown below together with the resultant stratum boundaries. In addition methods (I and II) are compared with respect to their relative efficiencies.

Total: Six Northern Provinces

Household income per year (in pounds)	f	Cf	$\sqrt{f}$	Cum$\sqrt{f}$	Total income	Cumulative income
less than 100	2176	2176	46.7	46.7	108800	108800
100 - 200	3034	5210	55 1	101.8	455100	563900
200 - 300	945	6155	30 7	132 5	236250	800150
300 - 400	414	6569	20 3	152.8	144900	945050
400 - 500	188	6757	13.7	166.5	84600	1029650
500 - 600	89	6846	9.4	175.9	48950	1078600
600 - 700	69	6915	8.3	184.2	44850	1123450
700 - 800	38	6953	6.2	190 4	28500	1151950
800 - 900	32	6985	5.7	196 1	27200	1179150
900 -1000	19	7004	4 4	200.5	18050	1197200
1000 -1200	34	7038	5 8	208.6	37400	1234600
1200 -1500	16	7054	4.0	213.5	21600	1256200
1500 -2000	12	7066	3.5	223 3	21000	1277200
2000 -2500	3	7069	1.7	227.2	6750	1283950
2500 -3000	6	7075	2.4	232 6	16500	1300450
3000 -3500	1	7076	1 0	234.8	3250	1303700
3500 -4000	2	7078	1.4	237 9	7500	1311200
4000 and +	2	7080	1.4	241.0	9000	1320200

I. Cum $\sqrt{\text{frequency}}$

$\frac{241}{3} = 80,3 \quad 160,7$

1 < 165 | 2 165 - 460 | 3 460 +

II. Equal share of total income

$\frac{1,320,200}{3} = 440,067 \quad 880,133$

1 < 170 | 2 170 - 200 | 3 200 +

In the above example which is based on the cumulative of $\sqrt{f}$ the boundaries are at 165 and 460

III. Equal share of households

$\frac{7080}{3} = 2360 \quad 4720$

1 <110 | 2 110 - 185 | 3 185 +

IV. Percentiles (50:30:20)

1 < 145 | 2 145 - 190 | 3 190 +

(Annex II cont'd)

Stratum I: Urban

Household income per year (in pounds)	f	Cf	$\sqrt{f}$	Cum$\sqrt{f}$	Total income	Cumulative income
less than 100	127	127	11.3	11 3	6350	6350
100 - 200	797	924	28 2	39 5	119550	125900
200 - 300	819	1743	28 6	68.1	204750	330650
300 - 400	482	2225	21.9	90.0	168700	499350
400 - 500	317	2542	17.8	107.8	142650	642000
500 - 600	203	2745	14.2	122 0	111650	753650
600 - 700	138	2883	11 7	133.7	89700	843350
700 - 800	98	2981	9 9	143.6	73500	916850
800 - 900	75	3056	8.7	152 3	63750	980600
900 -1000	49	3105	7.0	159 3	46550	1027150
1000 -1200	70	3175	8 4	171.2	77000	1104150
1200 -1500	51	3226	7 1	183.5	68850	1173000
1500 -2000	40	3266	6 3	197.6	70000	1243000
2000 -2500	10	3276	3.2	204 8	22500	1265500
2500 -3000	6	3282	2.4	210.2	16500	1282000
3000 -3500	4	3286	2.0	214 7	13000	1295000
3500 -4000	5	3291	2.2	219 6	18750	1313750
4000 and †	9	3300	3.0	226 3	40500	1354250

I. Cum$\sqrt{f}$

$\frac{226.3}{3}$ = 75.4 150.9

1	2	3
<300	300 - 860	860†

II. Equal share of total income

$\frac{1354250}{3}$ = 451417 902833

1	2	3
<375	375 - 780	780†

III. Equal share of households

$\frac{3300}{3}$ = 1100 2200

1	2	3
<225	225 - 395	395†

IV. Percentiles (50:30:20)

(Annex II cont'd)

Stratum 2· Semi Urban

Household income per year (in pounds)	f	Cf	$\sqrt{f}$	Cum $\sqrt{f}$	Total income	Cumulative income
less than 100	121	121	11.0	11.0	6050	6050
100 - 200	265	386	16.3	27.3	39750	45800
200 - 300	174	560	13.2	40 5	43500	89300
300 - 400	92	652	9.6	50.1	32200	121500
400 - 500	45	697	6.7	56.8	20250	141750
500 - 600	26	723	5.1	61.9	14300	156050
600 - 700	16	739	4.0	65.9	10400	166450
700 - 800	10	749	3.2	69 1	7500	173950
800 - 900	6	755	2.4	71 5	5100	179050
900 -1000	5	760	2 2	73.7	4750	183800
1000 -1200	13	773	3.6	78.7	14300	198100
1200 -1500	3	776	1 7	80.6	4050	202150
1500 -2000	2	778	1.4	84.7	3500	205650
2000 -2500	1	779	1.0	86 9	2250	207900
2500 -3000	1	780	1.0	89.1	2750	210650

I. Cum $\sqrt{f}$

$\frac{89.1}{3}$ = 29.7 59.4

1	2	3
<220	200 - 540	540+

II. Equal share of total income

$\frac{210650}{3}$ = 70217 140433

1	2	3
<260	260 - 500	500+

III. Equal share of households

$\frac{780}{3}$ = 260 520

1	2	3
<155	155 - 280	280+

IV. Percentiles (50:30:20)

Stratum 3: Rural

Household income per year (in pounds)	f	Cf	$\sqrt{f}$	Cum $\sqrt{f}$	Total income	Cumulative income
less than 100	1025	1025	32.0	32.0	51250	51250
100 - 200	1432	2457	37.8	69.8	214800	266050
200 - 300	333	2790	18.2	88.0	83250	349300
300 - 400	128	2918	11.3	99.3	44800	394100
400 - 500	41	2959	6.4	105.7	18450	412550
500 - 600	11	2970	3.3	109.0	6050	418600
600 - 700	12	2982	3.5	112.5	7800	426400
700 - 800	3	2985	1.7	114.2	2250	428650
800 - 900	5	2990	2.2	116.4	4250	432900
900 -1000	2	2992	1.4	117.8	1900	434800
1000 -1200	4	2996	2.0	120.6	4400	439200
1200 -1500	1	2997	1.0	122.3	1350	440550
2500 -3000	2	2999	1.4	125.4	5500	446050
3500 -4000	1	3000	1.0	127.6	3750	449800

I. Cum $\sqrt{f}$

$\frac{127.6}{3}$ = 42.5 85.0

1	2	3
<95	95 - 280	280+

II. Equal share of total income

$\frac{449800}{3}$ = 149933 299867

1	2	3
<150	150 - 245	245+

III. Equal share of households

$\frac{3000}{3}$ = 1000 2000

1	2	3
<95	95 - 170	170+

IV. Percentiles (50:30:20)

1	2	3

(Annex II cont'd)

	METHODS			
	I	II	III	IV
Region	Cum $\sqrt{\text{frequency}}$	Equal share of total income	Equal share of households	Percentile(50·30·20
Total	<165, 165-460	<170, 170-200	<110, 110-185	<145, 145-190
	460+	200+	185+	190+
Urban	<300, 300-860	<375, 375-780	<225, 225-395	<290 290-430
	860+	780+	395+	430+
Semi-Urban	<220, 220-540	<260, 260-500	<155, 155-280	<200 200-285
	540+	500+	280+	285+
Rural	< 95, 95-280	<150, 150-245	< 95, 95-170	<135 135-175
	280+	245+	170+	175+

Region	Method I Cum $\sqrt{f}$ Variance	Method II Equal share of total income variance	Relative efficiency = I/V^2 of Method I	of Method II
Total	0.85	3 03	118	33
Urban	0.76	20.90	132	5
Semi-Urban	0.99	21.90	101	5
Rural	0.45	6.90	222	14

ANNEX III

Illustrative forms for household enumeration

Form 1: Creation of strata on the basis of economic activity

Form 2: Creation of strata on the basis of declared income

Government of _____

19__ Household Economic Survey

Stratum

r		Address:

Region		District		Segment	

ehold
mber

Town or village

Name	Whether normally present 1. Yes 2. No	Relationship to head of household	Sex 1. M 2 F	Age	Level of education	Occupation	Economic activity	
							Code	Weight

For economic activity see back of form

Total

Form 2

Government of _____

19__ Household Economic Survey

Stratum

House number		Address:

Region		District		Segment	

Household number

Town or village

Household members

No.	Name	Whether normally present 1. Yes 2. No	Relationship to head of household	Sex 1. M 2. F	Age	Level of education	Occupation	Economic activity (code)	Personal income in past year 1/
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
							Total 1		

1/ Income other than that from joint enterprise of household members, including transfers

Income from household enterprises in past year

	Description	Unit	Quantity	Value
Agricultural production (crops, livestock poultry and other agricultural products)				
Non-agricultural production (handicrafts, yarn. cloth, processed food and drink, etc.)				
			Sub-total (a)	
Operating costs (material labour, utilities, services, etc.)				
			Sub-total (b)	
			Total 2 (a-b)	

STRATIFICATION DES REVENUS DANS LES SONDAGES SUR LES MENAGES

Résumé

Cette étude s'inspire de documents déjà existants à la CEA et au Bureau de statistique des Nations Unies, afin de clarifier l'utilisation des dernières strates de revenu dans les enquêtes sur les revenus des ménages et sur les dépenses ainsi que dans d'autres enquêtes où les variables étudiées concernent le revenu.

La conclusion principale est qu'une telle stratification devrait être utilisée afin d'économiser le plus possible le peu de ressources disponibles pour les enquêtes. En ce qui concerne la conception des sondages, le document montre une nette préférence pour l'utilisation de groupes percentiles en vue de créer des strates, ce qui n'était pas le cas dans les propositions précédentes de la CEA. Cependant, il n'est normalement pas souhaitable d'utiliser des groupes percentiles pour la présentation de résultats d'enquêtes ou pour des analyses. A cette fin, des strates de revenu bien définies sont préférables et peuvent être obtenues à partir des rapports d'enquêtes.

Pour une évaluation préliminaire du revenu des ménages dans la création de strates, le document fait sienne l'idée initiale de la CEA selon laquelle une information quantitative est la meilleure approche, mais il reconnaît que les indicateurs sont une solution de rechange fiable. Dans le paragraphe 36 du document, sous le titre, classification des activités, figure une série d'indicateurs et de coefficients de pondération qui correspondent aux niveaux des revenus individuels. Les coefficients sont additifs pour les membres d'une famille.

Deux brouillons de formulaires se trouvent à l'annexe II pour l'inscription de données nécessaires à la création de strates lors d'une énumération préliminaire des ménages au cours de l'avant-dernière phase. Le premier s'applique lorsqu'on ne doit utiliser que des indicateurs, tandis que le second est réservé aux revenus déclarés aussi bien en espèces qu'en nature.

Un examen plus poussé de tous les sujets déjà traités dans le document et ce à la lumière des données de l'enquête présente, est vivement préconisé.

Des calculs préliminaires montrant la création de strates de différentes façons, figurent à l'annexe I.

CLASSIFICATIONS, DEFINITIONS AND CONCEPTS OF LOCALITY IN AFRICA

Introduction

Sub-Saharan Africa, one of the world's least urbanized regions, has within the last thirty years or so been experiencing a very high rate of urban population growth. According to a recent publication, the proportion of the population living in urban areas in the continent was just 15 per cent in 1950; in 1980 it had reached an impressive 30 per cent 1/. Therefore, despite the accelerations of urban growth rates in sub-Saharan Africa, the typical settlements are still small population sized rural localities.

For example, in the least urbanized countries such as Burundi, Mozambique, Rwanda, and Upper Volta, the percentage of the population living in rural localities was over 90 per cent in 1980. In most of the other countries it was generally above 50 per cent: for example in Ghana and Sierra Leone, localities with population sizes of 5,000 and below comprised 64 and 75 per cent respectively of the population in 1980 2/. Similarly in Kenya, within the same period, localities with population sizes of 2,000 and less accounted for 85 per cent of the total population.

The prevalence of small localities, invariably spread out over large land surfaces, complicates the classifications and definitions of localities as well as making the identification of settlement patterns in a mapping exercise and during a census or survey field operation difficult. This is because frequent transformations take place in rural settlements through fragmentation, disappearance, resettlements and regroupings.

Because of these features, rural localities have an amorphous character in several countries. In this connection, the following observations made with respect to settlements in Uganda, during the 1969 census, seem applicable to many African countries.

"It is important to bear in mind that the population of Uganda does not live in clear-cut villages or "localities".... Although concentrations of the population are evident, and are referred to as trading centres or towns, the vast majority of the population is dispersed apparently at random across the rural countryside. This of course makes problems of defining an area, or relocating it at some later date, much more difficult than those where the population is clustered" 3/.

Some urban localities also exhibit amorphous features which have resulted in classification problems. This has cropped up in the cases of some fast growing urban areas comprising a town proper and a suburban fringe adjacent to it, bordering on its seams. Sometimes this suburban fringe, at one time physically distinct from the city or town proper, grows to such an extent that it merges into the city or town, blurring the boundaries separating the two former distinct localities.

1/ United Nations, Patterns of Urban and Rural Population Growth (New York: 1980), Population Studies, No. 68, ST/ESA/SER.A/68.

2/ ECA, Statistics Division estimates.

3/ Government of Uganda, Report on the 1969 Population Census, Vol. II (Kampala: April 1974) p.37.

De inition of locality

The distinguishing features of a locality are:4/

(a) A distinct (separate) population cluster;

(b) Inhabitants live in neighbouring quarters; and

(c) Has a name or a locally recognized status.

It may be labelled as an inhabited place, population centre, settlement and it can be a fishing settlement, mining camp, ranch, farm, market town, village and city.

Problems of definition and classification of rural localities in Africa

In the rural areas of certain African countries, another concept is used in place of locality, namely, the village 5/. However, the definitions of the two terms, locality and village, are not always identical. In some countries, it is usual for a village to be made up of more than one locality (i.e. a distinct population cluster). A group of localities which are collectively under the administration of a village chief is usually called a "village". The village of the headman usually bears the collective name of settlements that owe allegiance to him. The boundaries delimiting the area of the "village" in this case may be blurred.

Countries where this concept of a village have been used include Malawi and Botswana. In Malawi for the 1977 population census a village was described as a piece of land recognized by the District headquarters and its boundaries are defined by the limits of land under the control of a village headman. This means all the dwelling units which are found on the land of that village no matter where the people come from belong to the village. Also a village included all the groups of houses in the same area even though they may have a different name or may be isolated from the main village but stand on the land which is controlled by or claimed by a village chief 6/.

Similarly, in Botswana, for the 1964 census a village connotes a much wider social organizational set-up than a locality. Its main characteristics include an organization based on leadership by a chief, membership in a tribe, communal land tenure and a primary economy based on crop and livestock raising 7/. Accordingly, the spatial limits of a "village" so defined can encompass more than one locality.

4/ UN, Principles and Recommendations for Population and Housing Census. (New York: 1980) Statistical Papers Series M. No. 67, ST/ESA/STAT/SER M/67, para. 2.51-2.53.

5/ ECA, Study on Methods and Problems of the 1970 rounds of African Population and Housing Censuses, E/CN.14/CAS.10/15. paras. 145-147 (Addis Ababa, Oct. 1977).

6/ Malawi Government, Enumeration Manual: Population Census of 1977 (Zomba: Government Printer, n.d.). The practice is prevalent in certain areas, e.g. the Lilongwe district.

7/ Botswana, Report on the Population Census 1971, Gaborone, 1972.

This concept was used in the mapping and enumeration of the 1964 population census. The planners of the 1971 census, however, decided to use the concept locality instead because "the village .... is difficult of definition and has no geographically determined boundaries and the use of the concept /in 1964/ led to distortion of the pattern of population movement" 8/.

In two countries, Sudan and Egypt, the village is synonymous with the lowest administrative unit in the country 9/. In Northern Sudan, a Village Council is comprising of about 5 villages, is the smallest administrative unit which is also a settlement of persons belonging to the same tribe. In Egypt a village is the smallest administrative division in rural areas, so defined according to Presidential Decree.

Even in African countries, where the definition of a locality as a distinct population cluster has been employed, problems have cropped up with respect to classifications and identifications. The lack of a definative listing (including standard spellings of names of localities) is one major problem. In Sierra Leone, for instance, in the 1974 population census because of the lack of standard locality names, field workers used their own initiative in spelling names of localities 10/. This created difficulties in the office when comparisons between the 1974 population totals of localities and the 1963 census totals were attempted. It was discovered that the 1974 listings for some localities were different from the 1963 listings for the same localities.

Another problem with the classification (and identification) of localities is related to the rapid changes that occur in rural settlement patterns. One example described by Prothero involves the downhill movement of persons from remote and relatively inaccessible highland areas, which offered protection in the war - trouble past: "These movements have resulted in important local redistribution of population"11/. Nowadays the movement might take place from villages that are not connected to a new road to some locations by it. Also settlements might disappear or fragment for any number of reasons, say the death of a headman. Because of the large number of small sized settlements involved and also because of the frequency of the occurrence, it takes quite sometime for these changes to be reflected on the list of localities of the local authority and/or maps.

8/ Botswana, Op. cit.

9/ ECA, Manual of Demographic Concepts and Definitions Suitable for Africa. Addis Ababa: Jan. 1979, E/CN.14/CAO/3/6 and E/CN.14/Pop./13/

10/ Toma J. Makannah, "Some Aspects of the Methodology of the 1974 Population Census of Sierra Leone", Africana Research Bulletin, 7(1) (Oct. 1976) p.20.

11/ R. Mansell Prothero, "Migration in Tropical Africa", in J.C. Caldwell and C. Okonjo. (eds.) The Population of Tropical Africa, (London: Longmans, 1968), p. 252.

For example in the Gambia for the 1973 population census, Area Council Village Tax Lists and air photos were employed to update the census maps of localities 12/. But within the intercensal period, due to disappearance, combination and fragmentation of localities, compounded with changes in the names of some, there were difficulties in identifying some localities. Quite a few of the villages plotted on the air photos were listed as "possibly new" on the Tax list. But many of the "possible new" were as a matter of fact on the original maps but under different names. Also on the original maps were some villages listed as "possibly extinct". But as it transpired, many of the "possibly extinct" villages were still in existence though under different names from those provided in the map. The names were sometimes similar to those from the village Tax lists which have been listed as "possibly new".

Problems of definitions and classifications of urban localities

African countries are gradually becoming characterized by the increasing concentration of their populations in specific localities, urban areas. But currently, as has been demonstrated above, localities with small populations form the typical type of settlements in sub-Saharan Africa.

A controversial topic in the social science literature pertains to how meaningfully to define the two types of localities - urban and rural 13/. This is because urbanization being both a quantitative and qualitative phenomenon comprises many dimensions that are present, and at other times absent in different social and economic settings. For example, the presence of a minimum percentage of the population not engaged in agricultural activities is usually taken as one hallmark of urbanization. But in some countries, large urban localities may have most of their population engaged in agricultural activities. On the other hand, some small urban localities, for example, those devoted to mining may have only an insignificant proportion of their populations engaged in agricultural activities.

Also a point has been made that urbanization connotes a continuum rather than a dichotomy: an idea the designation of a minimum-size value separating urban from rural does not do justice.

Another reason for the lack of uniformity in the definition of urban is attributed to the different forms of local government structures existing in various countries. For example, some urban agglomerations have constant boundaries with changes in population occurring in them through births, deaths and migration only; in others, boundaries are not so rigidly defined, expansion could take place through absorption of adjacent localities, as well as from births, deaths and migration. Historical development of industrial and

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12/ Gambia, Population Census 1973: Vol. III, General Report (Central Statistics Division) (July 1976), Chapt. 3.

13/ See for example, Harold F. Kaufman and A. Singh, "The Rural-Urban Dialogue and Rural Sociology", Rural Sociology 34(4) (Dec. 1969); Charles T. Stewart, "The Urban-Rural Dichotomy: Concepts and Uses,"American Journal of Sociology 64(2) (Sept. 1958) and Richard Dewey, "The Rural-Urban Continuum: Real but Relatively unimportant", American Journal of Sociology 66(1) (July 1960).

agricultural activities also have led to the growth of settlements of various population sizes and economic character.

The various criteria employed for the classification of urban localities either singularly or jointly can be classified into five categories, namely:

(a) size of the population;

(b) administrative function or structure; and

(c) economic function.

Table 1 sets out the different definitions of "urban localities" by some African countries. This table shows a bewildering variety of criteria for the designation of urban in Africa, but the two most popular criteria used are administrative function or structure and population size.

By the administrative criteria, a locality is designated as urban if it is a capital or principal locality of an administrative division (e.g. communes, governorates, prefectures) e.g. Algeria, Egypt and Rwanda. A disadvantage of this sort of classification is that the growth of new urban localities is seldom reflected in the classification of localities that are urban, since the creation of new administrative divisions occurs very rarely and not in response to the growth of new urban centres, say a thriving mining or trading town. Accordingly this classification scheme might not reflect the long-term growth of urban settlements other than administrative centres.

The Administrative division of countries that are made up, almost entirely of a single urban locality or agglomeration such as the governorate of Cairo in Egypt, the city of Banjul in the Gambia and the city of Gaborone in Botswana are also classified as urban.

The classification by population size exhibits various threshold values; but 2,000 and 5,000 appear to be the most popular values. The threshold value of 2,000 is used in Ethiopia, Gabon, Kenya and Liberia, whereas 5,000 is employed in Ghana and Madagascar. But in the Central African Republic, 3,000 is the minimum size value and in Senegal 10,000.

It is of interest to note with respect to the above that Kingsley Davies in his comparative study of world urbanization found out that "the overwhelming majority of countries with a minimum-size definition specify a minimum somewhere within the range from 2,000 to 7,500 inhabitants"14/.

The classification scheme based on population size has some drawbacks, namely, the fact that the determination of a threshold value is usually done arbitrarily. The point at issue is whether, for example, minimum-size values such as 2,000 or 5,000 neatly separate centres with predominant urban features e.g. where the majority of the population follow non-agricultural pursuits from those where they do not.

14/ Kingsley Davies, World Urbanization 1950-1970, Vol. I: Basic Data for Cities, Countries and Regions, Berkeley, 1969, p.15.

Best copy available

ANNEX IV

Definitions of Urban Population: Selected African Countries

Country	Definition of "Urban"	Type of Urban classification(s)
Algeria	All communes having as Chef-lieu either a city, a rural town or an urban agglomeration	Administrative/local government
Benin	Towns of Cotonou, Porto-Novo, Ouidah. Parakou and Djougou	Administrative/local government
Botswana	The cities of Gaborone and Lobatsi and the urban agglomeration of Francistown	Administrative/local government
Burundi	Commune of Bujumbura	Administrative/local government
Central African Republic	20 principal centres with population of over 3,000	Administrative/local government/ pop, size
Chad	10 urban centres	Administrative/local government
Egypt	Governorates of Cairo, Alexandria, Port Said, Isamaila, Suez, Frontier Governorates and capitals of other governorates as well as district capitals (Markaz)	Administrative/local government
Ethiopia	Localities of 2.000 or more inhabitants	Population size
Gabon	Towns having a population of 2,000 inhabitants	Population size
Gambia	Banjul only	Administrative
Ghana	Localities of 5 000 or more inhabitants	Population size
Guinea	Urban centres	Administrative/local government
Guinea-Bissau	2 main ports, Bissau and Cacheu	Administrative
Kenya	Towns of 2,000 or more inhabitants	Population size
Liberia	Localities having more than 2.000 inhabitants	Population size

Country	Definition of "Urban"	Type of Urban classification(s)
Libya	Total population of Tripoli and Benghazi plus the urban ports of Beida and Derna	Administrative/local government
Madagascar	Centres having more than 5.000 inhabitants	Population size
Malawi	All townships and town planning areas and all district centres	Administrative/local government
Mauritania	Urban centres	Administrative/local government
Mauritius	Towns with proclaimed legal limits	Administrative
Morocco	117 Urban centres	Administrative/local government
Rwanda	Kigali, the capital, administrative centres of Prefectures, important agglomerations and their surroundings	Administrative
Senegal	Agglomerations of 10,000 or more inhabitants	Population size
Seychelles	Port Victoria, the capital	Administrative
Sudan	68 towns	Administrative
Swaziland	Localities proclaimed as urban	Administrative
Togo (1961)	Localities with the status of communes	Administrative
United Republic of Cameroon	Urban Centres	Administrative
United Republic of Tanzania	15 gazetted townships	Administrative
Zaire (1967)	Agglomerations of 2,000 or more inhabitants where the predominant activity is of non-agricultural type and also mixed agglomerations which are considered urban because of their type of economic activity but are actually rural	Population size/economic
Zimbabwe	Main towns including suburbs	Administrative

Source: United Nations, Patterns of Urban and Rural Population Growth (New York 1980).

Caldwell has discussed this issue, with respect, to the 1960 census of Ghana which used the minimum-size value of 5,000 for the definition of urban 15/. This value, Caldwell concluded from an analysis of the distribution of employment in localities of various sizes, only crudely separated centres with non-agricultural from agricultural occupations. He hypothesized that towns in Ghana (and probably in other African countries) grow very large (over 50,000 persons) before they contain negligible number of persons who either live and farm on the outskirts or live more centrally, although farming outside the town.

In Zaire, the joint criteria, a minimum-size value of 2,000 and predominant economic activity is employed for the classification of urban localities. This classification scheme has some problems, namely, that it is only after a census operation that it is possible to perform the reclassification of localities.

Summary and conclusions

Despite the rapid growth of urban localities within the past few years in sub-Saharan Africa, the proportion of the population living in urban localities is still low. Accordingly localities will small populations still form the majority of settlements. A characteristic feature of small settlements in the area concerns frequent changes that occur in them through fragmentation, re-allocation and disappearance. These features present problems for standardization of names, identification and classification.

Another problem area with rural locality classification in Africa has been the use of an alternative concept, the village. Whereas a locality is a distinct population cluster, with definable boundaries, the "village" as employed in some countries does not have clear-cut boundaries. Accordingly, the concept has created problems for mappers, enumerators and census statisticians involved in the classifications of localities. Therefore, despite the inherent sociological value of the concept in many African societies, its continued usage should be evaluated against its proven shortcomings.

The definition of a locality "as a distinct population cluster (also designated as inhabited place, population centre, settlement, etc.) in which the inhabitants live in neighbouring living quarters and which has a name or a locally recognized status" 16/ is highly recommended instead.

The discussion about urban classification clearly brought out the lack of uniformity in the usage of the concept in Africa, as elsewhere in the world.

15/ J.C. Caldwell, "Population change and Rural Transformation in Ghana" in Symposium on Population and Socio-Economic Development in Ghana, April 1968. Ghana Population Studies No. 2. Dept. of Sociology, University of Ghana, n.d.

16/ UN, Principles and Recommendations, Para. 2.51.

The opinion expressed in the UN recommendation to the effect that "because of national differences in the characteristics that distinguish urban from rural areas the distinction between urban and rural population is not yet amendable to a single definition that would be applicable to all countries" 17/ is pertinent to the situation in Africa.

But the proposal for the adoption of a classification scheme by size of locality need to be examined by African countries. However, in some countries because of the peculiar nature of the urbanization process, which a single criterion e.g. size of locality, cannot adequately describe, additional indicators such as a minimum percentage of the population engaged in non-agriculture activities could be used.

The urban/rural dichotomy, though not without certain shortcomings, is recommended for the classification of some tabulations from censuses and surveys especially on the total population and population of major and minor civil divisions.

17/ UN, Principles and Recommendation, Para 2.54.

CLASSIFICATIONS, DEFINITIONS ET CONCEPTS DE LOCALITE EN AFRIQUE

Résumé

En dépit du développement rapide des localités urbaines pendant ces dernières années en Afrique au sud du Sahara, la proportion de population vivant dans les localités urbaines est encore faible. Les localités avec une faible population constituent encore la majorité des agglomérations. Un trait caractéristique des petites agglomérations rurales de la zone est dû aux changements fréquents qui y surviennent à cause de la fragmentation, de la répartition et de la disparition. Ces caractéristiques présentent des difficultés pour la normalisation des noms, l'identification et la classification.

L'utilisation d'un autre concept : le village, pour ce qui est de la classification des localités rurales, engendre d'autres problèmes. Alors qu'une localité est un groupe de population distinct, ayant des frontières bien définies, le "village" par contre, tel qu'on l'entend dans certains pays, ne possède pas de limites bien déterminées. Aussi, le concept a créé des problèmes aux cartographes, énumérateurs et statisticiens d'enquête qui interviennent dans la classification des localités. Ainsi donc, malgré la valeur sociologique inhérente du concept dans de nombreuses sociétés africaines, son utilisation continue devrait être évaluée en fonction de ses imperfections évidentes. Il est plutôt vivement recommandé de définir une localité comme étant un "groupe de population distinct (ou alors un endroit habité, un centre de population, une agglomération, etc.) dans lequel les habitants vivent dans des quartiers voisins et qui a une appelation ou un statut localement reconnu".

Le débat sur la classification urbaine a mis en évidence l'absence d'uniformité quant à l'utilisation du concept tant en Afrique, qu'ailleurs de par le monde.

Il est dit dans une recommandation des Nations Unies qu'à cause des différences de caractéristiques qui distinguent les zones urbaines des zones rurales, il n'est past conseillé de ramener, à l'heure actuelle, la distinction entre les populations urbaines et rurales à une seule définition qui serait applicable à tous les pays. Cette opinion est pertinente dans le cas particulier de l'Afrique.

Cependant, les pays africains devraient examiner la proposition concernant l'adoption d'un système de classification selon l'étendue de la localité. Dans certains pays toutefois, à cause de la nature spécifique du processus d'urbanisation qui constitue un critère unique, l'étendue d'une localité ne peut la décrire adéquatement; on devrait utiliser des indications supplémentaires telles que le pourcentage minimum de la population engagé dans des activités autres que l'agriculture.

La dichotomie zone urbaine/zone rurale, bien que non dépourvue d'imperfections est recommandée pour le classement et l'exploitation des résultats des recensements et des enquêtes, surtout ceux sur la population totale et la population des unités administratives grandes et petites.

CONCEPTS, DEFINITIONS AND CLASSIFICATIONS FOR THE STUDY AND ANALYSIS OF FERTILITY AND MORTALITY IN AFRICA

Status of fertility and mortality statistics in Africa

The quantity and quality of information on fertility and mortality have steadily improved over the past few years in many African countries. To be sure, vital registration systems, an important source of such data, are not still fully developed in most of the countries; the exceptions being Algeria, Cape Verde, Egypt, Madagascar and Mauritius. 1/ Sample surveys and population censuses have therefore been the major sources of data.

Sample surveys have a fairly long history as sources of vital statistics information in Africa. 2/ In the 1950s and 1960s, beginning with the Guinea survey of 1954-55, a vast number of the early inquiries were conducted in the French-speaking countries of Western and Central Africa under the auspices of the Institut national de la statistique et des études économiques (INSEE) and the Société d'études pour le développement économique et sociale (SEDES) of France. In recent years, several African countries, both French- and English-speaking, have, either by ad hoc exercises, or by participating in the World Fertility Survey or the African Household Survey Capability Programme, conducted demographic sample surveys for the estimation of vital rates.

Also, an overwhelming number of African countries that participated in the 1960 and more so the 1970 rounds of African censuses included retrospective questions on fertility and mortality, from which estimates of vital rates have been derived. 3/

Given the virtual absence of viable vital registration systems within the continent, the derivation of vital rates has depended on indirect techniques. For the use of these techniques, special questions about retrospective and lifetime fertility and mortality have been included in the above surveys and censuses. A major question in this connection is that on the number of children ever born to women or a sample of women. Also, conventional survey questions such as the number of births or deaths within a specified period, usually twelve months prior to the census or survey have been probably more experimented within African countries than anywhere else.

1/ Economic Commission for Africa, "Methods and Problems of Civil Registration and vital statistics collection in Africa", Statistical Information Bulletin for Africa, No. 13, E/CN.14/SIB/13, October 1977.

2/ United Nations, "Demographic surveys in Africa, 1950-1970: Some results and conclusions", in Methodology of Demographic Sample Surveys, Statistical Papers, ST/TAO/SER.C/119, series M, No. 5 (New York: 1971) pp 154-157 and Pierre Cantrelle "La Méthode de l'observation démographique suivie par enquête à passage répétés (OS/EPR)", POPLAB, Scientific report series No. 14 (Chapel Hill; NC.: Univ. of North Carolina, 1974).

3/ Groupe de démographie africaine, Recensements africains 1er et 2ème partie, Paris, 1981.

The purpose of this paper is to discuss and evaluate, concepts and classifications used for the study and analysis of fertility and mortality. In particular, those concepts and classifications that have presented survey statisticians with special problems within African socio-economic environments will be given more detailed discussion. Two United Nations studies, namely, Principles and Recommendations for a Vital Statistics System and Principles and Recommendations for Population and Housing Census contain discussions of concepts, definitions and classifications on fertility and mortality, although from a global point of view. The approach in this paper differs from that adopted in these publications in that we shall attempt a review and a critical evaluation of the usages and adaptations of fertility and mortality concepts, definitions and classifications within Africa.

Questions on fertility and mortality in population censuses and surveys 4/

For the estimation of indices and for the purpose of analyses, demographic sample surveys and population censuses usually include the following core fertility and mortality questions:

(a) The members of the household classified by age and sex;

(b) Total number of children born to each woman;

(c) Births/deaths within the past twelve or twenty-four months by age and sex;

(d) Time since last live birth for each woman.

Experience in survey methodology and practice over the past two decades or so have resulted in modifications in some of these questions. In most cases, this development led to improvements in the quality of the responses. The modifications mainly involved the following three questions.

(a) The question on the total number of children ever born has been split into three components (sometimes also classified by sex).

- the number living at home;
- the number living elsewhere;
- the number dead.

(b) The question on births during the preceding 12 or 24 months has been replaced in many recent surveys by one on the date of the woman's most recent live birth.

(c) The question on deaths during the past 12 or 24 months, at one time the only source of direct information from censuses and surveys for adult mortality estimates, has now been replaced by one on the survival of mothers.

4/ UNECA and UNESCO, Manual on Demographic Sample Surveys in Africa, E/CN.14/CAS.7/17/Rev.2, September 1974, pp. 38-77.

Indirect estimation techniques

As has been mentioned above, indirect techniques have played an important role in the estimation and correction of fertility and mortality information in Africa, and have therefore been closely related with the development of concepts, definitions and classifications as well as influencing the design of questions. 5/

The data from the surveys mainly from the French-speaking and Eastern African countries in the 1950s and 1960s and censuses were "the material for which both Brass and the stable population methods of fertility analysis were first evolved. The tropical African population data have so richly fathered invention partly because of their very poorness and partly because of the early stage of demographic transition in the region". 6/

A brief description of these methods is therefore in place. 7/ With reference to fertility analysis, the method devised by William Brass makes use of those aspects of the current data (derived from the question on births within a current period, usually a year prior to the survey or census) and also of the retrospective data (derived from the question on the total number of children ever born). Basically, the technique involves the derivations of the age patterns of fertility from the current birth data and the levels from the retrospective data of the younger women.

Relative to mortality analysis providing indices for childhood and infant mortality rates, use is made of the age specific death rates (derived from the questions on time of last live birth and whether the last born child was alive at the time of the survey or census; and sometimes from the data on deaths within the past 12 or 24 months prior to the census or survey) and the proportions of children dead (from past mortality data).

CONCEPTS, DEFINITIONS AND CLASSIFICATIONS

(a) Fertility

Concepts, definitions and classifications on fertility (and mortality) used in censuses and surveys are of two main categories, namely - current and past (or lifetime). Current fertility measures relate to children born within a definite, recent time interval; and past (or lifetime) fertility measures relate to all children born during the lifetime of the women interviewed.

The questions on fertility are usually addressed to women 12 years of age and above in the majority of African countries. Other respondents that have been used for these questions include:

5/ William Brass et alia, The Demography of Tropical Africa (Princeton, New Jersey: Princeton University Press, 1968).

6/ John C. Caldwell. The study of Fertility and Fertility Change in Tropical Africa, World Fertility Survey, Occasional papers, no. 7, May 1974.

7/ William Brass, Methods for Estimating Fertility and Morality from Limited and Defective Data, Chapel Hill, N.C. : POPLAB Occasional publications, 1975.

- females 10 years of age and above [Liberia (1974) and Malawi (1977)]
- females 15 years of age and above [Gambia (1983) Lesotho (1976) and Swaziland (1976)]
- married, widowed and divorced women [Egypt (1976) Central African Republic (1975), Tunisia (1975)]
- females born in 1964 and before (i.e. approximately 13 years of age and above at the time of the census) [Mauritania (1976)]
- women under 55 years not reported as single [Mauritius (1972)]

Congo (1974) and Burundi (1979) used both the age limit 12 years and above as well as a de jure classification of women i.e. those who were usual residents whether present or temporarily absent.

Current fertility concepts, definition and classifications

Births occurring in a specified recent period usually 12 or 24 months preceding the census or survey;

Date of last live birth;

Births since preceding (round(s) of survey (for multiround surveys).

BIRTHS WITHIN PRECEDING 12 OR 24 MONTHS

This question has been experimented within most of the surveys conducted under French auspices in Western and Central Africa. Recently the question has featured in the census questionnaires of, for example, Botswana (1981), Cameroon (1976), Congo (1974), Liberia (1974), Mali (1976), Mauritania (1976/77) and Somalia (1975).

The question was usually directed to women 12 years of age and above or other age classes and categories enumerated for the question on fertility. However in Cameroon (1976), Burundi (1979) and Comoros (1980) the question was asked in terms of births in the household instead of births to women.

It is the opinion of some authors that births to women is a more concrete concept than births in the household: "Births to women represent a clear and manageable de facto concept. Alternative units of reference could obviously cause biases of predictable kinds... If the household is the unit, events in dissolved households risk being omitted or counted twice". 8/

Also, there were exceptions to the use of the 12 months reference period. In Mauritania (1976/77) the question referred to births that occurred within the interval of the feast of AID, which comprised the muslim lunar year. The period does not add up to exactly 12 months.

8/ E. Van de Walle, "Characteristics of African Demographic Data" in W. Brass et alia, The Demography of Tropical Africa, (Princeton, N.J.: Princeton University Press, 1968) Chapt. 2.

Similarly in Somalia (1976), the reference time period was less than a year, as it was stated to be "since the last muslim feast of AID", about seven months to the census. Also in Botswana (1981) the question was in the form: "How many children have been born alive since independence?" This comprised a period of 10½ months.

Cameroon (1976) adopted a novel approach to the phrasing of this question. Twelve months were the reference intervals; but in order that the enumerator (and through him the respondents) clearly recalled this period, he was required to enter both the start and the end of the interval when asking the questions:" the period 9 April 1975 to 8 April 1976".

The main problems encountered during the administration of the question are (a) respondents are sometimes prone to include the occurrence of an event that took place outside the reference period; and (b) omit to include relevant events that took place within the period. The reasons for these mistakes emanate from confusion with the reference period.

The attempts by the African countries mentioned above that used concrete intervals rather than the abstract 12 months were aimed at minimizing these problems. However, in most cases they introduced errors of their own. The main problem was that the reference period selected was usually less than 12 months, which means births for the remaining period have to be prorated assuming a linear rate of growth. This was the approach used in Botswana (1981).

"When the number of days in a year was divided by the number of days in this period, a raising factor of 1.0992 was obtained. The seasonality patterns of births are not known, but the above method of obtaining the raising factor assumes that births and deaths occur at uniform rates through the year." Therefore the use of the technique might result, in either over or under-estimates of births, since seasonal patterns were disregarded.

Moreover as Van de Walle has observed in the evaluation of the earlier experimentations with this question, it is impossible to ascertain whether respondents are more easily able to distinguish time intervals in terms of lunar months, between the period of the celebration of independence etc. compared with calendar months. 9/

DATE OF LAST LIVE BIRTH

Recently in place of the question on births within a specified reference period, another question on date of last live birth has been included in the censuses and surveys conducted in some African countries. This question featured in the census questionnaires of Angola (1981), Burundi (1978), Gambia (1983), Kenya (1979), Lesotho (1976), Mauritius (1972), Sierra Leone (1974), Somalia (1975), Sudan (1975), Swaziland (1976), Tanzania (1978), Zambia (1980) and Zimbabwe (1982).

The question usually consists of two parts - the date of birth of the last live birth to be given in both months and years and whether the child survived. As births that occur in the most recent period, that is, up to two or three years before the census or survey are the events of interest, it is imperative that information be provided for both months and years for them.

9/ Van de Walle, op. cit.

In Tanzania, however, in the precoded questionnaire used for the 1978 census, provision was made for only the year of the last live birth. Since the census took place towards the end of August, only births for about eight months were accounted for in 1978. To get estimates of births for the 12 months prior to the census, a linear interpolation technique had to be used. As was observed with respect to the discussion on the question on births within the preceding 12 months, the use of a linear interpolation method results in either over- or under-estimation of births, as the formula disregards the patterns of seasonal variations of the event.

More generally, because this question must be asked of every woman and also because attention must focus on the last live birth, the probability for women to provide positive responses is high. 10/ In view of these considerations, this question may obtain a higher rate of reported births than the question on births within a specified period.

PAST OR LIFETIME FERTILITY

Questions in a census or survey on the number of children ever born alive to women or a sample of women, distinguishing (a) those still alive and (b) those dead, are the main sources of information on past or lifetime fertility.

NUMBER OF CHILDREN EVER BORN ALIVE

This is the most common question on fertility included in African censuses and surveys in recent years. It also featured in the censuses and surveys of the 1950s and 1960s. In the 1973 National Demographic Survey of Tanzania and the Kenya World Fertility Survey, a question on this topic was also included.

Some differences could be discerned about the phrasing and design of this question. In some countries /e.g. Angola (1981), Cameroon (1976), Congo (1974), Central African Republic (1975), Gabon (1980) and Somalia (1975)/ the question was asked in terms of the total number of children ever born and the total number either alive or dead, classified by sex. In others /e.g. Botswana (1981), Burundi (1979), Gambia (1983), Kenya (1979), Sierra Leone (1975), Tunisia (1975) and Lesotho (1976)/ the question was asked in the new form i.e. the total number of children born alive was classified into three categories: (a) living in the household, (b) living away from the household and (c) dead.

In addition, some countries (e.g. Gambia, Kenya and Lesotho) required that the children in the three categories be classified by sex.

The main shortcoming of the information on the number of children ever born alive is that on the average it is under-reported. 11/ Omissions occur more regularly, it seems, to children born who die soon after birth; those not living in the household at the time of the interview; and those born of

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10/ UNECA and UNESCO, Manual on Demographic Sample Surveys in Africa (September 1974), Chapter 5.

11/ United Nations, Methods of Estimating Basic Demographic Measures from Incomplete Data, (New York 1967) Population Studies No. 142, Manual IV, Chapter II.

a husband other than the current one. In particular, it has been noted that the average number of children increases very gradually when women are thrity or thirty-five and sometimes decreases at ages forty-five or fifty. This strongly points to omission of children by older women.

The question is also susceptible to over-reporting, 12/ though on a reduced scale, because sometimes still births are reported as children who die in infancy. Over-reporting can also occur for children born by another wife to the current husband, adopted children and grand-children.

However, the problem of dating births that bedevils fertility measures pertaining to a recent period is absent here.

FERTILITY (PREGNANCY) HISTORY APPROACH 13/

The fertility history approach attempts to collect information relating to all live births that a set of women has born within their lifetime or some recent period such as five or ten years prior to the inquiry. A series of questions is asked about each child born such as the date of birth, sex and current age, if no longer alive, age at death; whether or not living at home; whether single or multiple births. In order to estimate fertility measures (such as cohort and period rates), the ages of women are also asked. A fertility history format has sometimes been integrated into a pregnancy history format which includes, in addition to births, information pertaining to pregnancy, such as still births, miscarriages and abortions. At other times, a fertility history format has been expanded to include also information about family planning, e.g. contraceptive uses.

Fertility (pregnancy) history approaches have been affected by three main types of errors:

(a) omission of births (pregnancy);

(b) birth misplacement;

(c) age misreporting by women.

(a) Omission of births

Since respondents in a fertility history survey are asked to recollect details about births that have taken place a long time (especially the older women), due to recall lapse, the probability exists for the omission of some births. In particular, these omissions are more likely for certain events, such as children that have died soon after birth and those not living with their mothers. Illegitimate children may be deliberately omitted. These omissions underestimate period and cohort fertility rates especially of earlier periods.

12/ Committee on Populations and Demography, Collecting Data for the Evaluation of Fertility and Mortality (Washington D.C.: National Academy Press, 1981), p. 220.

13/ J.E. Potter, "Problems in using birth-history analysis to estimate trends in fertility", Population Studies, Vol. 31, No. 2 - July 1977, pp. 364; and W. Brass: "The analysis of maternity histories to detect changes in fertility" UN Economic Social Council, 1971, E/CN.9/AC.12/12/R.1.

(b) Birth misplacement

This problem has been discussed with reference to births within the last 12 or 24 months: respondents bringing forward events that occurred outside the reference period and omitting events that occurred within it. Relative to estimates from the fertility histories data, when the occurrence of a birth is assigned to a wrong period - for example, births relating to a period 0-4 assigned to a period 5-9 prior to the inquiry or vice versa - it distorts period estimates.

(c) Age misreporting

The tendency for women in non-numerate societies such as in many African countries not to know their ages is well known. Therefore errors in reported ages occur which distort period fertility measures in a similar way as birth misplacement resulting in an exaggeration or underestimation of rates.

Documented experience about fertility (birth) histories come from two East African countries - Tanzania and Kenya 14/. In the 1973 National Demographic Survey of Tanzania a birth history module was employed. The fertility measures from the information from the birth histories displayed a peculiar trend: the tendency for the average parity to be higher the younger the cohort. This phenomenon was explained by two factors (a) a consistent rise in fertility, and (b) the effects of omissions by older women, with the latter explanation more plausible.

In the Kenyan 1977-1978 Fertility Survey, which involved interviews of some 8,100 women by means of fertility histories questionnaires, omission of live births was not the main problem. On the contrary, it would appear that the older women reported not just their own children but also those of their unmarried daughters or the children of previous wives as their own. Rather the problem was with the misallocation of dates of live births by the older women and/or overstatements of ages by these same women.

MARITAL STATUS 15/

Marriage customs exert influence on fertility, particularly in societies, such as the rural areas of Africa, where modern birth control practices are unknown. The following classification schemes have been adopted by some African countries in their censuses and surveys:

Algeria (1976) - single; married, widowed, separated, divorced

Benin (1979) - single, married (if male no. of wives at time of enumeration); widowed, divorced

Burundi (1979) - single, married, widowed, divorced

14/ R.A. Henin, D.C. Ewbank and N. Oyo, "Fertility trends: Analysis of fertility Histories in the Demography of Tanzania," Vol. VI edited by Roushdi A. Henin, (Dar-es-Salaam, n.d.) pp. 94 - 109; and Roushdi A. Henin, A. Korten and Linda A. Werner, Evaluation of Birth Histories: A Case Study of Kenya, World Fertility Survey, Scientific Reports, No. 36, October 1982.

15/ E. Van de Walle, "Marriage in African censuses and inquiries", in W. Brass (ed). The Demography of Tropical Africa: ECA, "Collection of Statistics of Marital status in Africa", presented to Working Group on Censuses of Population and Housing, Addis Ababa, 21-29 June 1965, E/CN.14/CAS.4/CPH/5 and B. Gill et alia. The Post Enumeration Survey, 1960 Census of Ghana, Vol. VI, Accra, Census Office, 1971.

Cameroon (1973) - single, married (if male, no. of wives at time of census), divorced, separated, widowed

Central African Republic (1975) - single, married, widowed, divorced

Egypt (1976) - married, divorced, single, widowed, duration of married life, (if male, no. of wives at time of census), age at first marriage

Ghana (1960) PES - never married, married, divorced, widowed

Liberia (1974) - never married; married, widowed; divorced, separated

Mauritius (1972) - widowed, divorced, separated, married civilly only, married religiously, in a union but no married religiously or civilly; single

Sudan (1973) - never married; married, widowed, divorced

From the above classification scheme, marital status is usually categorized into - single, married, widowed and divorced; a fifth category, separated is sometimes included. A smaller number of countries classified male marriages into polygamous and monogamous marriages.

A more detailed classification scheme of marital status is given in some demographic sample surveys. A good example is the 1973 National Demographic Survey of Tanzania 16/. Here the classification of marital status consisted of the following seven groups:

- never married;
- currently married, married once to a monogamous husband;
- currently married, married once to a polygamous husband;
- currently married, married more than once;
- widowed;
- separated and divorced;
- separated but not divorced.

Classification schemes, such as those provided above, in most cases take as given the wide variety of conjugal unions in African societies, which have been amply documented by anthropologists and sociologists. Their major weaknesses, taking marriage unions in the majority of countries as a single category reduce the usefulness of the collected information for the study of fertility. For this and other reasons some countries also inquire into the forms of the marriage unions from which it is possible to infer details such as the stability or otherwise of the unions.

16/ R.A. Henin, "Marriage"; Chapt. 4 in The Demography of Tanzania, Vol, VI edited by R.A. Henin Dar-es-Salaam: n.d.

The classification scheme adopted by Mauritius above partially addresses this issue. Also Ghana in the 1960 Post enumeration survey added another question on forms of marriage (customary only; customary and ordinance; church and ordinance; customary and in church; moslem, with or without customary; mutual consent).

AGE AND MARRIAGE, AGE AT FIRST MARRIAGE AND DURATION OF MARRIAGE

Refined measures about fertility and marital status may be derived from information from inquiries about age at marriage and duration of marriage. Given the nature of a census inquiry, it is not possible to include detailed questions on any one topic, therefore these two subjects have been included mainly in demographic surveys.

A problem with these concepts is that the collected information is usually affected by age misreporting and misplacement in time of the event - problems which have plagued African censuses. Also responses especially about age at first marriage might be affected by interviewer's assumption "about usual age at marriage and maternity history" 17/.

OWN CHILDREN METHOD 18/

Census and survey information on age and relationship to head of the household are the basic data source for the estimation of fertility measures for this technique. The following classifications could be derived from the data source - (a) own children by age and age of mother (b) all children by age, and (c) women by age (preferably single years).

Retrospective fertility rates pertaining to periods prior to the inquiry are estimated for single or five year cohorts of women aged 15-54 at the time of the census or survey. Conventional age-specific fertility rates are derived by interpolation of the retrospective rates and by translation of the age of the women at the time of the enumeration to age at the reference period.

Also using information on the classification of own-children by age and age of mother and all children by age, a classification of all children by age and age of mother is derived by prorating non-own-children of a given age according to the distribution of own-children of this age.

In African countries, the derivation of own-children fertility estimates is fraught with two problems - age misreporting of both mothers and children and proper reporting of natural children of women. Although Cho recommends broader rather than single age classifications for countries where problems of age misreporting are prevalent, this device will not entirely eliminate errors from African age data.

17/ E. Van de Walle, op. cit.

18/ I.J. Cho, "The own-children approach to fertility estimation on elaboration", IUSSP, International Population Conference, Liège, 1973. Vol. 2 pp. 263-279, and L.J. Cho and G. Feeney, Fertility Estimation by the own-children method - a methodological elaboration, Intern. Program of Lab. for Pop. studies, reprint series no. 20, Chapel Hill, N.C. University of North Caroline, 1978.

MORTALITY

Most of the concepts, definitions and classifications discussed on fertility have some relevance for mortality as well. Therefore, the description that follows, will emphasise subjects not previously discussed and problems of conepts, definitions and classifications peculiar to mortality. At the outset, it should be noted that mortality data collection and analyses have presented more serious problems to survey statisticians.

The major questions pertaining to mortality in a census or survey include:

- Deaths during a recent period, usually 12 or 24 months prior to the inquiry;
- Date of last death in the household;
- Children ever born to woman classified into (a) those dead and (b) those surviving;
- Maternal and paternal orphanhood.

DEATHS DURING THE LAST 12 MONTHS

The question has been included since the 1950s in the censuses and surveys of African countries, although in recent years the practice is on the decline. Countries that included the question on births within a recent period, for example Botswana (1981), Cameroon (1976), Congo (1974), Liberia (1974), Mali (1976), Mauritania (1976/77) and Somalia (1975), also included, a similar question about deaths. The question is susceptible to errors (mainly recall lapse and time misplacement of the events) that affect retrospective questions such as those that relate to time reference. In addition, the death question is particularly prone to problems of omissions because of the following factors: taboos about mentioning the names of dead persons; a child dying soon after birth before making an impact on the family; and the household of the deceased breaking up on the occasion of the death of say the head.

To minimize omissions, other details about the deceased are asked such as the sex and age. However, even with the inclusion of these other probing questions, the information derived is often considered a conservative measurement of actual rates.

CHILDREN EVEN BORN - NUMBER AMONG DEAD

It has become the practice in inquiries that when a question on children ever born is included it should be classified into two categories - (a) children surviving and (b) children dead. Because it is free of dating errors, this question is usually considered capable of improving the information on vital events. But, recall lapse problems (e.g. older women forgetting children who died soon after birth or those who have grown up and live away from home) still persist, more so because the reference period is longer. Some of the recall lapse errors can be minimized by asking for information separately for boys and girls and also about the age at the time of death.

PATERNAL ORPHANHOOD 19/

A question on this topic has been included in censuses and surveys to provide alternative estimates of adult mortality. The origin of this question emanates from dissatisfaction with other techniques for the estimation of adult mortality such as the use of single parameter model life-tables selected in order to coincide with infant and child mortality estimates from the questions on cumulative mortality; gross underreporting from the question on deaths within the past 12 months; and intercensal survival rates compromised by misreporting.

The question (i.e. whether each person's father is still living) has appeared in the census and survey questionnaires of African countries such as - Chad (1964), West Cameroon (1964), Mauritania (1965), Lesotho (1967/68), Botswana (1971), Gambia (1973), Sierra Leone (1974), Sudan (1973) and Congo (1975).

An evaluation of African experience with the technique identified the following sources of bias, namely, because of the practice in many African countries of using the terms "father" and "mother" to designate not just natural but also foster parents, bias is introduced in the estimates. This problem can be eliminated by the inclusion of more probing question by the interviewer to identify biological parents.

More generally, if mortality has been falling prior to the inquiry, a situation existing in some African countries, mortality estimates derived might not reflect the true position at the time of the inquiry.

DATE OF LAST DEATH IN HOUSEHOLD

The question is similar to that on fertility, namely, the women's last live birth. This question causes problems in inquiries because of the following reasons. Firstly some omissions are bound to occur in the cases of households that disintegrate on the death of say a strategic member or by migration. Secondly, sometimes the period which respondents may be asked to recall can be quite long so that the answers are affected by recall lapse and wrong dating of the event.

It is the considered view of some authors that this question did not provide satisfactory results in the African countries that have used it. 20/ As a result its continued usage is not recommended.

In the 1970 and 1980 round of African censuses, Tunisia (1975), Burundi (1979) and Comoros (1980) included it in their questionnaires. Burundi and Comoros required not just the date of the last death, but also the dates of all other deaths in the household.

19/ J.G.C. Blacker, "The estimation of adult mortality in Africa from data on orphanhood", Population Studies, Vol. 31 No. 1, (March 1977), pp. 107-128. The technique to extract usable information from the question whether a person's mother is alive has yet to be refined.

20/ UNECA and UNESCO, op. cit. p. 51.

CAUSES OF DEATH

These have been defined as all those diseases, morbid conditions or injuries which either resulted in or contributed to the death, and the circumstances of the accident or violence which produced any such injuries. 21/ The information on causes of death is collected in demographic surveys and more usually in civil registration systems.

In a civil registration system, information on causes of death is provided by either a physician who attended the patient or a coroner (a doctor or official of state) in cases of sudden death by accident and other dubious circumstances or a lay person.

In most of the countries of Africa, because of the sparse spatial distribution of medical and diagnostic facilities, a problem that is acute in especially rural areas, lay persons have been mainly used as certifiers.

Reporting by lay person is fraught with difficulties. The standard classification system available, the World Health Organizations (WHO) International Classification of Diseases (ICD) system is suitable for countries where most of the diagnoses is performed by qualified medical personnel. 22/ The International Conference for the Ninth Revision of the classification discussed this topic with some delegates opting for some simplified form of the ICD for lay reporters, whilst others proposed a system independent of the ICD. 23/

At the moment causes of death reporting by lay persons ought to be systematized. In this connection, a report by Cantrelle on some experimentations with the question in rural surveys conducted in Senegal, Upper-Volta, Benin, Cameroon and Lake Chad appear relevant. 24/

From the surveys, it was observed that the recorded causes (i.e. the symptoms, diseases or accidents declared by the families) of death were fairly correct for cases of accidents, confinements or well-known specific illnesses such as smallpox or measles. But when the cases involved subtle relationships between underlying and direct or immediate, attendant causes, the recorded causes of death shown by symptoms such as coughing, diarrhea, fever and jaundice were only indicative of the real causes.

To confound this problem an evaluation of even the doctors' certified causes of death from the civil registration systems in Sierra Leone and Ghana, for example, was not satisfactory especially in the important distinction between underlying and direct or intermediate and attendant causes of death.

21/ WHO, International Classification of Diseases, 1975 revision (Geneva, 1977), p. 699.

22/ WHO, idem, p. 763.

23/ WHO, op. cit.

24/ Pierre Cantrelle, "Mortality" in J.C. Caldwell (ed) Population Growth and Socio-economic change in West Africa (New York: Columbia University Press, 1975) Chapt. IV.

FOLLOW-UP QUESTIONS: BIRTHS/DEATHS SINCE PRECEDING ROUND(S) OF THE SURVEY

The discussion on concepts, definitions and classifications above have been based on the assumption that the data collection system used is the single round retrospective survey (SRRS) i.e. enumerators collecting information about births and deaths that have occurred to households during a single visit. Reference has already been made to some of the shortcomings - for example, recall lapse and time misplacement of events - of the retrospective questions (like births/deaths within a specified period).

Follow-up surveys are looked upon to minimize some of the shortcomings of the SRRS.25/ The follow-up surveys method involves interviewers visting the same household during two or more visits. At the initial visit, the composition and characteristics of the household are noted, with changes such as the occurrence of births and deaths, inquired into, in subsequent visits. Two features of the follow-up surveys technique enables it to improve on the recording of births and deaths over the SRRS. One, rather than depending on respondents to recollect the occurrence of events as in the SRRS, interviewers instead are excepted to compile a complete list of members of the households during each visit, with differences in the list being accounted for as either a birth, death or migration. Secondly, problems of correctly placing in time of vital events that plague SRRS are minimized because of the unambiguous reference periods between subsequent rounds.

AGE

The data on age is fundamental for the study of fertility and mortality. Apart from its use in the classification of data on fertility and mortality, for example, total number of children borne alive, survived children and parents, the information has been used to estimate fertility in the absence of basic data.

But despite its importance for demographic analyses, the estimation of age presents problems in African censuses and surveys, mainly because most people in this socio-economic setting do not know their ages in terms of calendars 26/. Accordingly, the collected information on age has been affected by misreporting and age selective under enumeration.

In African censuses, three approaches have been experimented with, in asking questions about age. In some countries (e.g. Burundi (1979), Benin (1979), Egypt (1976) and Sierra Leone (1974), the question was on completed years only, with the ages of enfants under one year required to be given in months. In a second set of African countries (e.g. Algieria (1976), Congo (1974), Morocco (1971) and Tunisia (1975) the information on age was asked only in terms of date of birth (months and year; and sometimes day). The third set of African countries (e.g. Cameroon (1976), Central African Republic (1975) and Ivory Coast (1975) made a compromise by requiring the information to be given in either date of birth, if known or otherwise in terms of completed years.

25/ Jacques Vallin, "La Mortalité en Algérie:" Population 30 novembre/décembre 1975, pp. 1023-46; and Committee on Population and Demography op. cit., chapter 4.

26/ For more detailed discussion on this, see, ECA and UNESCO, Manual on Demographic Sample Surveys, E/CN.14/CAS.7/17/Rev. 2, 1974, p. 39.

Each of these approaches have advantages and disadvantages. With respect to the question on only completed years, this may be the only feasible method in countries such as in Africa where the overwhelming majority of the population do not know their ages. Of course the estimated ages so derived will be affected by errors of misreporting. The compromise questions whereby those repsondents who know their dates of birth are given the option to provide this information, and those that do not, have their ages estimated, has the advantages that it takes cognizance of the fact that a growing number of persons in many African countries especially the younger generation, know their dates of birth. That this more refined information on age should be collected, along with the crude estimates, has much to recommend it.

The third approach, the provision of the age data only by means of date of birth, ought to provide a richer source of data for countries, such as Mauritius, where the registration of births and deaths is almost universe. However, in other countries, where this condition is not satisfied, the adoption of this method would not improve the method based on estimates from completed years.

HISTORICAL CALENDAR 27/

Given the perennial problems connected with the collection of data on age in the majority of African countries, some techniques have been suggested as aids to survey statisticians. For example it has been observed that since people are aware of the fact that they are younger or older than other members of their household, even when they may not know their ages in calendar years, the information on relative ages could be used by interviewers to estimate ages.

Also, resort has been made to a more sophisticated method for age assessment - the historical calendar (e.g. Ghana (1960 census) Sierra Leone (1963 census) and Tanzania (1967 census). There is a debate in the literature as to whether the use of the historical calendar significiantly improves reported ages in demographic inquiries for various reasons. Firstly, the preparation of a useful calendar must include both national and local events. But some countries (e.g. Ghana (1960) and Tanzania (1967) that have prepared such calendars included only national events. It has been discovered that a majority of the illiterate rural populations have no recollection of most of the national events. Secondly the care and time that should be invested in the use of calendars for them to prove useful tools in age assessment are often not put in by interviewers.

27/ D.D. Ewbank, Age Misreporting and Age - Selective Under - Unumerations: Sources, Patterns and Consequences for Demographic Analysis (Washington, D.C.: National Academy Press, 1981).

ANNEX V

FERTILITY AND MORTALITY CONCEPTS INCLUDED BY AFRICAN COUNTRIES IN THE 1970 AND 1980 ROUNDS OF CENSUSES

	Year of census	Age completed years	Marital status	Age at first marriage	Children ever born alive	Births within the preceding 12 or 24 months	Date of last live birth	Deaths within the preceding 12 months	Date of last death	Orphanhood	Others
NORTH AFRICA											
Algeria	1977	X 1/	X								
Egypt	1976	X 2/	X	X	X						No. of present wives
Morocco	1970	X 2/	X								
Socialist People's Libyan Arab Jamahiriya	1973	X	X		X						
Sudan	1983	X	X	X	X	X	X		X	X	
Tunisia	1975	X 1/	X	X	X						
WEST AFRICA											
Benin	1979	X	X								
Cape Verde	1980	X	X		X	X					
Gambia	1983	X	X		X	X	X			X	
Ghana	1970	X									
Guinea	1983	X 2/	X								
Guinea Bissau	1979										
Ivory Coast	1975	X 1/	X								
Liberia	1974	X	X		X	X		X			
Mali	1976	X	X			X		X			
Mauritania	1976	X 1/	X		X	X		X			
Niger	1977	X 2/	X								
Nigeria	1973	X	X								
Senegal	1976	X 1/	X								
Sierra Leone	1974	X			X	X	X			X	
Togo	1981	X	X			X					
Upper Volta	1975	X 2/	X								
CENTRAL AFRICA											
Burundi	1979	X	X								
Cameroon United Republic of	1976	X 2/	X		X	X		X			
Central African Republic	1975	X 1/	X		X	X					
Chad											
Congo	1974	X 1/	X		X	X		X			No. of marriage contracted
Equatorial Guinea											
Gabon	1980	X 2/	X		X	X		X			
Rwanda	1978	X 2/	X		X						
Sao Tome & Principe	1970	X									
Zaire											
EAST AND SOUTHERN AFRICA											
Angola											
Botswana	1981	X	X		X	X		X			
Comoros	1980	X 2/	X	X	X	X		X	X	X	No. of marriage contracted
Djibouti	1983	X	X	X 3/	X	X		X		X	
Ethiopia											
Kenya	1979	X	X		X	X	X				
Lesotho	1976	X	X		X	X	X	X			
Madagascar	1975	X 1/	X								
Malawi	1977	X	X		X	X		X			No. of present wives
Mauritius	1972	X 1/	X		X		X				
Mozambique	1980	X	X		X	X		X			
Seychelles	1977	X			X	X					
Somalia	1975	X	X		X	X		X			
Swaziland	1976	X			X	X	X			X	
Tanzania United Republic of	1978	X	X		X	X	X			X	
Uganda	1979	X	X								
Zambia	1980	X 2/	X	X	X	X	X			X	
Zimbabwe	1982	X	X		X	X	X				

1/ Date of birth

2/ Date of birth and completed years

3/ Age at marriage

CONCEPTS, DEFINITIONS ET CLASSIFICATIONS POUR L'ETUDE DE LA FECONDITE ET DE LA MORTALITE EN AFRIQUE

Résumé

La quantité et la qualité des informations sur la fécondité et la mortalité dans la plupart des pays africains se sont constamment améliorées au cours des dernières années, bien que des systèmes d'état civil qui constituent une source importante de telles informations, ne soient vraiment fiables que dans quelques pays. Les principaux sources de données sont donc les enquêtes par sondage et les recensements.

Etant donné qu'il n'existe pratiquement pas de système d'état civil vital et fiable pour le continent, les taux sont obtenus grâce aux questions indirectes. Avec ces méthodes, des questions spéciales concernant la fécondité cumulative et complète et la mortalité ont été incluses dans les enquêtes et recensements africains.

Une évaluation critique ainsi qu'un examen des usages africains des concepts et des classifications utilisés pour la collecte de données constituaient le thème du document. On a examiné aussi des concepts et des classifications tels que les enfants nés vivants parmi lesquels ceux qui sont décédés par la suite, les dates du dernier décès et de la dernière naissance vivante, les naissances et décès survenant dans les derniers 12 ou 24 mois.

L'examen a révélé des différences substantielles entre les pays africains en ce qui concerne la formulation et la conception des questions. Il était évident aussi que pour recueillir des données, on a utilisé à plusiers reprises les questions sur les enfants nés vivants, sur les naissances/décès survenus pendant les 12 ou 24 mois précédant l'enquête ainsi que les dates des dernières naissances vivantes.

Le document comporte aussi un examen des problèmes de concepts et de classifications en ce qui concerne par exemple l'âge et la situation de famille, un examen des difficultés conceptuelles relatives à l'application de techniques utilisant les inventaires de grossesses, les reconnaissances d'enfants, et l'état d'orphelin de pére dans les conditions socio-économiques africaines.